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(54) Title: COMPOSITIONS AND METHODS FOR THE MODIFICATION OF GENE TRANSCRIPTION

(57) Abstract

Novel isolated polynucleotides that encode plant transcription factors are provided, together with DNA constructs comprising such polynucleotides. Methods for using such constructs in modulating the expression of endogenous and/or heterologous genes are also disclosed, together with transgenic plants comprising such constructs.

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COMPOSITIONS AND METHODS FOR THE MODIFICATION OF GENE TRANSCRIPTION

Technical Field of the Invention

This invention relates to compositions isolated from plants and their use in the modification of gene transcription and/or expression. More specifically, this invention relates to plant polynucleotide sequences encoding transcription factors that are components of the cellular transcription apparatus and the use of such polynucleotide sequences in the modification of gene expression.

Background of the Invention

Eucaryotic gene expression is regulated, in part, by the cellular processes involved in transcription. During transcription, a single-stranded RNA complementary to the DNA sequence to be transcribed is formed by the action of RNA polymerases. Initiation of transcription in eucaryotic cells is regulated by complex interactions between *cis*-acting DNA motifs, located upstream of the gene to be transcribed, and *trans*-acting protein factors. Among the *cis*-acting regulatory regions are sequences of DNA, termed promoters, which are located close to the transcription initiation site and to which RNA polymerase is first bound, either directly or indirectly. Promoters usually consist of proximal (*e.g.*, TATA box) and more distant elements (*e.g.*, CCAAT box). Enhancers are cis-acting DNA motifs which may be situated further up- and/or down-stream from the initiation site.

Both promoters and enhancers are generally composed of several discrete, often redundant, elements each of which may be recognized by one or more *trans*-acting regulatory proteins, known as transcription factors. Regulation of the complex patterns of gene expression observed both spatially and temporally, in all developing organisms, is thought to arise from the interaction of enhancer- and promoter-bound, general and tissue-specific transcription factors with DNA (Izawa T, Foster R and Chua NH, *J. Mol. Biol.* 230:1131-1144, 1993; Menkens AE, Schindler U and Cashmore AR, *Trends in Biochem. Sci.* 13:506-510, 1995). Developmental decisions in organisms as diverse as *Drosophila melanogaster, Saccharomyces cerevisiae, Arabidopsis thaliana and Pinus radiata* are regulated by transcription factors. These DNA-binding regulatory molecules

have been shown to control the expression of genes responsible for the differentiation of different cell types, for example, the differentiation of leaf trichomes and xylem tissue in *Arabidopsis thaliana,* formation of endoderm from embryonic cells in *Xenopus laevis* and the initiation of gene expression in response to environmental and phytohormonal stress in plants (Yanagisawa S and Sheen J, *The Plant Cell* 10:75-89, 1998).

Transcription factors generally bind DNA in a sequence-specific manner and either activate or repress transcription initiation. The specific mechanisms of these interactions remain to be fully elucidated. At least three separate domains have been identified within transcription factors. One is essential for sequence-specific DNA recognition, one for the activation/repression of transcriptional initiation, and one for the formation of protein-protein interactions (such as dimerization). Four motifs, or domains, involved in DNA sequence recognition and/or transcription factor dimerization have been identified to date: zinc fingers; helix-turn-helix; leucine zipper; and helix-loop-helix. Both helix-loop-helix and leucine zipper protein motifs have been implicated in the binding of transcription factors to DNA via their ability to readily form homo- or hetero-dimers *in vivo*. "Activating" domains are rich in either proline, glutamine or acidic amino acids. It has been proposed that this net negative region of the transcription factor interacts with the TATA box-binding transcription factor TFIID, RNA polymerase, and/or another protein associated with the transcription apparatus.

Studies indicate that many plant transcription factors can be grouped into distinct classes based on their conserved DNA binding domains (Katagiri F and Chua NH, *Trends Genet.* 8:22-27, 1992; Menkens AE, Schindler U and Cashmore AR, *Trends in Biochem. Sci.* 13:506-510, 1995; Martin C and Paz-Ares J, *Trends Genet.* 13:67-73, 1997). Each member of these families interacts and binds with distinct DNA sequence motifs that are often found in multiple gene promoters controlled by different regulatory signals. Several classes of transcription factors that have been identified to date are described below.

The basic/leucine zipper (bZIP) is a conserved family of transcription factors defined by a basic/leucine zipper (bZIP) motif (Landschultz et al., *Science* 240:1759-1764, 1988; McKnight, *Sci. Am..* 264:54-64,1991; Foster et al., *FASEB J.* 8[2]:192-200, 1994). Transcriptional regulation of gene expression is mediated by both the bZIPs and other families of transcription factors, through the concerted action of sequence-specific transcription factors that interact with regulatory elements residing in the promoter

regions of the corresponding gene. The bZIP bipartite DNA binding structure consists of a region enriched in basic amino acids (basic region) adjacent to a leucine zipper that is characterized by several leucine residues regularly spaced at seven amino acid intervals (Vinson et *al.*, *Science* 246:911-916, 1989). Whereas the basic region directly contacts the DNA, the leucine zipper mediates homodimerisation and heterodimerisation of protein monomers through a parallel interaction of the hydrophobic dimerization interfaces of two α-helices, resulting in a coiled-coil structure (O'Shea et al., *Science* 243:538-542, 1989; *Science* 254:539-544, 1991; Hu et al., *Science* 250:1400-1403,1990; Rasmussen et al., *Proc. Natl. Acad. Sci. USA* 88:561-564, 1991).

Dof proteins are a relatively new class of transcription factor and are thought to mediate the regulation of some patterns of plant gene expression in part by combinatorial interactions between bZIP proteins and other types of transcription factors binding to closely linked sites. Such an example of this combinatorial interaction has been observed between bZIP and Dof transcription factors (Singh, *Plant Physiol.* 118:1111-1120, 1998). These Dof proteins possess a single zinc-finger DNA binding domain that is highly conserved in plants (Yanagisawa, *Trends Plant Sci.* 1:213, 1996). Specific binding of the Dof protein to bZIP transcription factors has been demonstrated and it has been proposed that this specific interaction results in the stimulation of bZIP binding to DNA target sequences in plant promoters (Chen et al., *Plant J.* 10:955-966, 1996). Examples of such Dof/bZIP interactions have been reported in the literature, including for example, the *Arabidopsis thaliana* glutathionine S-transferase-6 gene (GST6) promoter which has been shown to contain several Dof-binding sites closely linked to the ocs element, a recognized bZIP binding site (Singh, *Plant Physiol.* 118:1111-1120, 1998).

The bZIP family of G-box binding factors from Arabidopsis (including GBF1, GBF2 and GBF3, for example) interact with the palindromic G-box motif (CCACGTGG). However, it has been demonstrated that the DNA binding specificity of such transcription factors, for example GBF1, may be influenced by the nature of the nucleotides flanking the ACGT core (Schindler et al., *EMBO J.* 11:1274-1289, 1992a). *In vivo* transient and transgenic plant expression studies have shown that these ACGT elements are necessary for maximal transcriptional activation and have been identified in a multitude of plant genes regulated by diverse environmental, physiological, and environmental cues. Classification of these transcription factors based upon their ability

to bind to the ACGT core motif yielded a relatively diverse group of proteins, including, for example the CamV 35S promoter as-1-binding protein which exhibits DNA binding site requirements distinct from those proteins interacting with the G-box (Tabata et al., *EMBO J.* 10:1459-1467, 1991). Thus, in addition to defining the individual classes of bZIP proteins on the basis of their DNA binding specificity, such proteins can also be classified according to their heterodimerisation characteristics (Cao et al., *Genes Dev.* 5:1538-1552, 1991; Schindler et al., *EMBO J.* 11:1261-1273, 1992b).

Environmentally inducible promoters require the presence of two cis-acting elements, critical for promoter activity, one of which is the moderately conserved G-box (CCACGTGG) (deVetten et al., *Plant Cell* 4[10]:1295-1307, 1992). A mutation in one of the two elements abolishes or severely reduces the ability of the promoter to respond to environmental changes. The sequence of the second cis-acting element, positioned near the G-box, is not conserved among different environmentally-inducible promoters, but may be similar among promoters induced by the same signal. The spacing between the G-box and the second cis-acting element appears to be critical, suggesting a direct interaction between the respective binding factors (deVetten and Ferl, *Int. J. Biochem.* 26[9]:1055-1068, 1994; Ramachandran et al., *Curr. Opin. Genet. Dev.* 4[5]:642-646, 1994).

Basic helix-loop-helix zipper proteins represent an additional class of bZIP transcription factors described in the literature and includes, for example, the Myc proteins. These proteins contain two regions characteristic of transcription factors: an N-terminal transactivation domain consisting of several phosphorylation sites, and a C-terminal basic helix-loop-helix (bHLH) leucine zipper motif known to mediate dimerization and sequence specific DNA binding via three distinct domains: the leucine zipper, helix-loop-helix, and basic regions.

The Myb family of transcription factors is a group of functionally diverse transcriptional activators found in both plants and animals that is characterized by a conserved amino-terminal DNA-binding domain containing either two (in plant species) or three (in animal species) imperfect tandem repeats of approximately 50 amino acids (Rosinski and Atchley, *J. Mol. Evol.* 46(1):74-83, 1998; Stober-Grasser et al., *Oncogene* 7[3]:589-596, 1992). Comparisons between the amino acid sequences of representative plant and mammalian MYB proteins indicate that there is a greater conservation between

the same repeat from different proteins, than between the R2 and R3 repeats from the same protein (Martin and Paz-Ares, *Trends Genet.* 13[2]:67-73, 1997). More than 100 MYB genes have been reported from *Arabidopsis thaliana* (Romero et al., *Plant J.* 14[3]:273-284, 1998), representing the largest regulatory gene family currently known in plants. DNA-binding studies have demonstrated that there are differences, but also frequent overlaps, in binding specificity among plant MYB proteins, in line with the distinct but often related functions that are beginning to be recognized for these proteins. Studies involving the eight putative base-contacting residues in MYB DNA binding domains have revealed that at least six are fully conserved in all plant MYB proteins identified to date and the remaining two are conserved in at least 80 % of these proteins (Martin and Paz-Ares, *Trends Genet.* 13[2]:67-73, 1997). Mutational analysis involving residues that do not contact bases have indicated that the sequence-specific binding capacity of MYBs is affected and this may account for some of the differences in the DNA–binding specificity between plant MYB proteins (Solano et al., *J. Biol. Chem.* 272[5]:2889-2895, 1997). This large-sized gene family may contribute to the regulatory flexibility underlying the developmental and metabolic plasticity displayed by plants.

Homeotic transcription factors have, in animals, been implicated in a number of developmental processes including, for example, the control of pattern formation in insects and vertebrate embryos and the specification of cell differentiation in many tissues (Ingham, *Nature* 335:25-34, 1988; McGinnis and Krumlauf, *Cell* 68:283-302, 1992). Homeodomain secondary structures are characterized by a distinctive helix-turn-helix motif initially identified in bacterial DNA binding domains. This helix-turn-helix sequence/structure motif spans approximately 20 amino acids and is characterized by two short helices separated by a sharp 90 degree bend or turn (Harrison and Aggarwal, *Ann. Rev. Biochem.* 59:933-969, 1990). This helix has been shown to bind in the major groove of the DNA helix.

Plant homeobox genes have been identified in a number of plant species including *Arabidopsis thaliana,* maize, parsley and soybean. Expression pattern analysis of maize homeobox gene family members suggests that these transcription factors may be involved in defining specific regions in the vegetative apical meristem, potentially involved in the initiation of leaf structures (Jackson et al., *Development* 120:405-413, 1994). Such

observations imply that the plant homeobox genes, as for the animal homeobox genes, may be involved in the determination of cell fate.

Homeodomain-zipper (HD-zip) represents an additional family of homeodomain proteins. These homeodomain-zipper proteins (HD-zip) possess both the characteristic homeodomain linked to an additional leucine zipper dimerization motif. This family includes, for example, Athb-1 and Athb-2 (Sessa et al., *EMBO J.* 12:3507-3517, 1993) and Athb-4 (Carabelli et al., *Plant J.* 4:469-479, 1993).

The LIM domain is a specialized double-zinc finger motif found in a variety of proteins, in association with domains of divergent functions, such as the homeodomain (*see* the sunflower pollen-specific SF3 transcription factor: Baltz et al., *Plant J.* 2:713-721, 1992; or forming proteins composed primarily of LIM domains: Dawid et al., *Trends Genet.* 14[4]:156-162, 1998). LIM domains interact specifically with other LIM domains and with many different protein domains. LIM domains are thought to function as protein interaction modules, mediating specific contacts between members of functional complexes and modulating the activity of some of the constituent proteins. Nucleic acid binding by LIM domains, while suggested by structural considerations, remains an unproven possibility. However, it is possible that together with the homeodomain, the LIM domain could bind to the regulatory regions of developmentally controlled genes, as has been proposed for the paired box, a conserved sequence motif first identified in the paired (PRD) and gooseberry (GSB) homeodomain proteins from *Drosophila* (Triesman et al., *Genes Dev.* 5:594-604, 1991). The PRD box is also able to bind DNA in the absence of the homeodomain. LIM-domain proteins can be nuclear, cytoplasmic, or can shuttle between compartments. In the animal systems, several important LIM proteins have been shown to be associated with the cytoskeleton, having a role in adhesion-plaque and actin-microfilament organization. Among nuclear LIM proteins, the LIM homeodomain proteins form a major subfamily with important functions in cell lineage determination and pattern formation during animal development.

The AP2 (APETALA2) and EREBPs (ethylene-responsive element binding proteins) are the prototypic members of a family of transcription factors unique to plants, whose distinguishing characteristic is that they contain the so-called AP2 DNA-binding domain. AP2/EREBP genes form a large multigene family, and they play a variety of roles throughout the plant life cycle: from being key regulators of several developmental

processes, like floral organ identity determination or control of leaf epidermal cell identity, to forming part of the mechanisms used by plants to respond to various types of biotic and environmental stress. In *Arabidopsis thaliana*, the homeotic gene *APETALA2* (*AP2*) has been shown to control three salient processes during development: (1) the specification of flower organ identity and the regulation of floral organogenesis (Jofuku et al., *Plant Cell* 6:1211-1225, 1994); (2) establishment of flower meristem identity (Irish and Sussex, *Plant Cell* 2[8]:741-753, 1990); and (3) the temporal and spatial regulation of flower homeotic gene activity (Drews et al., *Cell* 65[6]:991-1002, 1991). DNA sequence analysis suggests that AP2 encodes a theoretical polypeptide of 432 aa, with a distinct 68 aa repeated motif termed the AP2 domain. This domain has been shown to be essential for AP2 functions and contains within the 68 aa, an eighteen amino acid core region that is predicted to form an amphipathic α-helix (Jofuku et al., *Plant Cell* 6:1211-1225, 1994). Ap2-like domain-containing transcription factors have been also been identified in both *Arabidopsis thaliana* (Okamuro et al., *Proc. Natl. Acad. Sci. USA* 94:7076-7081, 1997) and in tobacco with the identification of the ethylene responsive element binding proteins (EREBPs) (Ohme-Takagi and Shinshi, *Plant Cell* 7[2]:173-182, 1995). In *Arabidopsis*, these RAP2 (related to AP2) genes encode two distinct subfamilies of AP2 domain containing proteins designated AP2-like and EREBP-like (Okamuro et al., *Proc. Natl. Acad. Sci. USA* 94:7076-7081, 1997). *In vitro* DNA binding has not been shown to date using the RAP2 proteins; however, based upon the presence of two highly conserved motifs YRG and RAYD within the AP2 domain, it has been proposed that binding DNA binding occurs in a manner similar to that of AP2 proteins.

Zinc finger domains of the type Cys_2His_2 appear to represent the most abundant DNA binding motif in eukaryotic transcription factors, with several thousand being identified to date (Berg and Shi, *Science* 271[5252]:1081-1085, 1996). A structural role for zinc in transcription factors was initially proposed in 1983 for the transcription factor IIIA (TFIIIA) (Hanas et al., *J Biol. Chem.* 258[23]:14120-14125, 1983). The Cys_2His_2 Zinc finger domains are characterized by tandem arrays of sequences of C-x(2,4)-C-x(3)-[LIVMFYWC]-x(8)-H-x(3,5)-H (where X represents a variable amino acid). Structurally, the zinc finger consists of two antiparallel β strands followed by an α helix (Lee et al., *Science* 245[4918]:635-637, 1989). This structural arrangement allows for the cysteine and histidine side chains to coordinate the zinc with the three other conserved residues

forming the hydrophobic core adjacent to the metal coordination unit (Berg and Shi, *Science* 271[5252]:1081-1085, 1996). Many proteins possessing a Cys_2His_2 domain have been shown to interact with DNA in a sequence-specific manner. Crystal structure analysis of the mouse transcription factor Zif268 bound to a specific DNA target indicates that the zinc fingers in the protein/DNA complex reside in the major groove of the double helix and interacts with the DNA bases through amino acid side chains referred to as the contact residues (Pavletich and Pabo, *Science* 252[5007]:809-817, 1991). The orientations of the zinc finger domains with respect to the DNA are usually identical, with each domain contacting a contiguous 3-base pair subsite, the majority of which are directed to one strand. There are few interdomain interactions and the DNA recognition by each zinc finger appears to be largely independent of the other domains (Berg and Shi, *Science* 271[5252]:1081-1085, 1996).

The CCAAT-box element identified by Gelinas et al. (*Nature* 313[6000]:323-325, 1985) has been shown to occur between 80 bp and 300 bp from the transcription start site and may operate in either orientation, with possible cooperative interactions with multiple boxes (Tasanen et al., *J Biol. Chem.* 267[16]:11513-11519, 1992); or other conserved motifs (Muro et al., *J. Biol. Chem.* 267[18]:12767-12774, 1992; Rieping and Schoffl, *Mol. Gen. Genet.* 231[2]:226-232, 1992). CCAAT-box related motifs have been identified in a number of promoters in a variety of organisms including yeast (Hahn et al., Science 240[4850]:317-321, 1988), rat (Maity et al., *Proc. Natl. Acad. Sci. USA* 87[14]:5378-5382, 1990; Vuorio et al., *J. Biol. Chem.* 265[36]:22480-22486, 1990); and plants (Rieping and Schoffl, *Mol. Gen. Genet.* 231[2]:226-232, 1992; Kehoe et al., *Plant Cell* 6[8]:1123-1134, 1994). In both yeast and vertebrates, a protein complex has been shown to bind to the CCAAT-motif. In yeast the complex consists of three proteins, known as HAP2, HAP3 and HAP5 (Pinkham and Guarente, *Mol. Cell. Biol.* 5[12]:3410-3416, 1985).

MADS box transcription factors interact with a conserved region of DNA known as the MADS box. All MADS box transcription factors contain a conserved DNA-binding/dimerization region, known as the MADS domain, which has been identified throughout the different kingdoms (Riechmann and Meyerowitz, *Biol. Chem.* 378[10]:1079-1101, 1997). Many of the MADS box genes isolated from plants are expressed primarily in floral meristems or floral organs, and are believed to play a role in

either specifying inflorescence and floral meristem identity or in determining floral organ identity. One class of regulatory genes responsible for floral meristem identity and the pattern of meristem development includes the genes *APETALA1* (*AP1*), *APETALA2* (*AP2*), *CAULIFLOWER* (*CAL*), *LEAFY* (*LFY*) and *AGAMOUS* (*AG*) from *Arabidopsis thaliana*. Both *LFY* and *AP1* have been shown to encode putative transcription factors (Weigel et al., *Cell* 69:843-859, 1992), with *AP1* and *AG* each encoding putative transcription factors of the MADS box domain family (Yanofsky et al., *Nature* 346:35-39, 1990). Mutations in the *Lfy* gene have been shown to result in a partial conversion of flowers into infloresence shoots.

Summary of the Invention

Briefly, the present invention provides polynucleotides isolated from plants that encode transcription factors, together with polypeptides encoded by such polynucleotides. The isolated polynucleotides and polypeptides of the present invention may be usefully employed in the modification of gene expression in plants, since both tissue- and temporal-specific gene expression patterns have been shown to be governed by transcription factors during the natural development of a plant. The inventive polynucleotides and polypeptides may thus be employed in the manipulation of plant phenotypes.

In a first aspect, the present invention provides polynucleotides isolated from eucalyptus and pine which encode transcription factors, including transcription factors from the following families of regulatory proteins: bZIP, bZIP family of G-box binding factors; basic helix-loop-helix zipper (bHLH); homeotic/homeodomain/homeobox/MADS; homeodomain zipper (ZIP); LIM domain; AP2 and EREBs; zinc finger domains of type Cys2His2; CCAAT box elements; and MYB. In one embodiment, the isolated polynucleotides of the present invention comprise a DNA sequence selected from the group consisting of: (a) sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; (b) complements of the sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; (c) reverse complements of the sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; (d) reverse sequences of the sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106;

and (e) sequences having either 40%, 60%, 75% or 90% identical nucleotides, as defined herein, to a sequence of (a) – (d).

In a further aspect, isolated polypeptides encoded by an inventive DNA sequence are provided. In specific embodiments, such polypeptides comprise an amino acid sequence selected from the group consisting of: (a) sequences provided in SEQ ID NOS: 592-1182, 1913-1930 and 2107-2278; and (b) polypeptides comprising sequences having either 60%, 75%, 90% or 95% identity, as defined herein, to a sequence of (a).

In another aspect, the present invention provides polypeptides isolated from eucalyptus and pine which comprise transcription factor DNA-binding domains. In specific embodiments, such polypeptides comprise an amino acid sequence selected from the group consisting of: (a) sequences provided in SEQ ID NOS: 2279-2293 and 2296-2368; and (b) sequences having either 60%, 75%, 90% or 95% identical residues, as defined herein, to a sequence of (a).

In yet a further aspect, the invention provides DNA constructs comprising a polynucleotide of the present invention, either alone, in combination with one or more other polynucleotides disclosed herein, or in combination with one or more known DNA sequences, together with transformed cells comprising such constructs.

In a related aspect, the present invention provides DNA constructs comprising, in the 5'-3' direction, a gene promoter sequence; an open reading frame coding for at least a functional portion of a polypeptide encoded by an inventive polynucleotide, or a variant thereof; and a gene termination sequence. The open reading frame may be orientated in either a sense or antisense direction. DNA constructs comprising an untranslated, or non-coding, region of a gene coding for a transcription factor polypeptide of the present invention or a nucleotide sequence complementary to an untranslated region, together with a gene promoter sequence and a gene termination sequence, are also provided. Preferably, the gene promoter and termination sequences are functional in a host plant. Most preferably, the gene promoter and termination sequences are those of the original genes but others generally used in the art, such as the Cauliflower Mosaic Virus (CMV) promoter, with or without enhancers such as the Kozak sequence or Omega enhancer, and *Agrobacterium tumefaciens* nopalin synthase terminator may be usefully employed in the present invention. Tissue-specific promoters may be employed in order to target

expression to one or more desired tissues. The DNA construct may further include a marker for the identification of transformed cells.

In a further aspect, transgenic cells comprising the genetic constructs of the present invention are provided, together with organisms, such as plants, comprising such transgenic cells, and fruits, seeds and other products, derivatives, or progeny of such plants. Propagules of the inventive transgenic plants are included in the present invention. As used herein, the word "propagule" means any part of a plant that may be used in reproduction or propagation, sexual or asexual, including cuttings.

Plant varieties, particularly registrable plant varieties according to Plant Breeders' Rights, may be excluded from the present invention. A plant need not be considered a "plant variety" simply because it contains stably within its genome a transgene, introduced into a cell of the plant or an ancestor thereof.

In yet another aspect, methods for modifying gene expression in a target organism, such as a plant, are provided, such methods including stably incorporating into the genome of the organism a DNA construct of the present invention. In a preferred embodiment, the target organism is a plant, preferably a woody plant, more preferably selected from the group consisting of eucalyptus and pine species, and most preferably from the group consisting of *Eucalyptus grandis* and *Pinus radiata*. In a related aspect, a method for producing a target organism, such as a plant, having modified gene expression is provided, the method comprising transforming a plant cell with a DNA construct of the present invention to provide a transgenic cell and cultivating the transgenic cell under conditions conducive to regeneration and mature plant growth.

In yet a further aspect, the present invention provides methods for modifying the activity of a transcription factor in a target organism, such as a plant, comprising stably incorporating into the genome of the plant a DNA construct of the present invention. In a preferred embodiment, the target plant is a woody plant, preferably selected from the group consisting of eucalyptus and pine species, most preferably from the group consisting of *Eucalyptus grandis* and *Pinus radiata*.

The above-mentioned and additional features of the present invention and the manner of obtaining them will become apparent, and the invention will be best understood by reference to the following more detailed description. All references

disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

Detailed Description of the Invention

The present invention provides isolated polynucleotides that encode plant transcription factors. As discussed above, transcription factors are components of the cellular "transcription apparatus" and are involved in the regulation of gene expression. Transcription factors are known to play a critical role in the growth and development of plants, and in cellular responses to external stimuli, such as environmental factors and disease pathogens. Transformation of plants with polynucleotides that encode proteins involved the cellular transcription process may thus be employed to modify properties such as lignin deposition, flower development, male and female sterility.

Using the methods and materials of the present invention, the amount of a specific transcription factor may be increased or reduced by incorporating additional copies of genes or a fragments of said genes encoding the transcription factor into the genome of a target organism, such as a plant. Similarly, an increase or decrease in the amount of the transcription factor may be obtained by transforming the target plant with antisense copies of such genes.

In one embodiment, the present invention provides isolated polynucleotides encoding, or partially encoding, plant transcription factors that are involved in the regulation of gene expression. The polynucleotides of the present invention were isolated from forestry plant sources, namely from *Eucalyptus grandis* and *Pinus radiata*, but they may alternatively be synthesized using conventional synthesis techniques. In specific embodiments, isolated polynucleotides of the present invention comprise a sequence selected from the group consisting of sequences identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; complements of the sequences identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; reverse complements of the sequences identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; reverse sequences of the sequences identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; at least a specified number of contiguous residues (*x*-mers) of any of the above-mentioned polynucleotides; extended sequences corresponding to any of the above polynucleotides; antisense sequences

corresponding to any of the above polynucleotides; and variants of any of the above polynucleotides, as that term is described in this specification.

In another embodiment, the present invention provides isolated polypeptides encoded by the DNA sequences of SEQ ID NOS: 1-591, 1895-1912 and 1931-2106. In certain specific embodiments, such isolated polypeptides include a sequence selected from the group consisting of SEQ ID NOS: 592-1182, 1913-1930 and 2107-2278.

The polynucleotides and polypeptides of the present invention were putatively identified by DNA and polypeptide similarity searches. The inventive polynucleotides and polypeptides have demonstrated similarity to transformation factors that are known to be involved in regulation of transcription and/or expression in plants. The putative identities of the inventive polynucleotides are shown below in Table 1.

TABLE 1

Transcription factor family	Polynucleotide SEQ ID NO:
Basic leucine zipper (bZIP)	133, 148, 194, 206, 246, 258, 261, 265, 279, 284, 285, 286, 290, 294, 303, 318, 331, 455, 470, 473, 497, 501, 512, 533, 538, 554, 558, 575, 1896-1899, 1938, 1939, 1950, 1958, 1959, 1961, 1963, 1969, 1973, 1981, 1983, 1989, 1991, 1998, 2002, 2004, 2021, 2022, 2025, 2028, 2029, 2033-2035, 2039, 2042, 2043, 2046, 2054, 2056, 2061, 2063, 2073, 2078, 2079, 2089, 2090, 2101, 2103, 2106
bZIP family of G-box binding factors	128, 136, 141, 142, 184, 202, 222, 244, 329, 541, 545
Basic helix-loop-helix zipper	157, 179, 223, 271, 274, 305, 317, 548, 563
Myb	138, 167, 214, 221, 232, 248, 252, 254, 255, 270, 276, 278, 280, 281, 282, 283, 292, 293, 315, 319, 328, 463, 483, 485, 486, 491, 492, 494, 502, 504, 507, 508, 510, 515, 518, 519, 520, 521, 527, 534, 536, 537, 540, 553, 559, 566, 572, 588, 1905, 1906, 1931, 1932, 1934-1936, 1940, 1948, 1949, 1951, 1953-1955, 1957, 1960, 1962, 1964-1968, 1974, 1975, 1977-1979, 1982, 1984-1988, 1992, 1994-1997, 2001, 2003, 2013-2015, 2024, 2026, 2027, 2030, 2032, 2036-2038, 2041, 2044, 2045, 2047-2049, 2051, 2052, 2057-2060, 2065, 2067, 2071, 2072, 2074-2077, 2080-2088, 2104, 2105
Homeotic/homeodomain/homeobox/ MADS	2, 3, 4, 7, 9, 10, 11, 12, 13, 17, 19, 25, 26, 27, 28, 29, 31, 32, 34, 35, 36, 37, 39, 40, 44, 45, 49, 50, 51, 52, 54, 55, 57, 60, 62, 63, 64, 65, 66, 69, 72, 74, 76, 77, 79, 82, 84, 88, 89, 92, 94, 96, 97, 98, 100, 102, 103, 104, 105, 106, 107, 108, 11, 112, 114, 116, 117, 123, 125, 127, 168, 185, 249, 250, 332, 333, 334, 336, 337, 338, 340, 341, 343, 344, 345, 346, 347, 348, 349, 350, 351, 353, 354, 355, 356, 357, 359, 360, 361, 362, 364, 365, 366, 367, 368, 370, 371, 372, 373, 374, 375, 376, 379, 380, 383, 384, 385, 386, 387, 389, 392, 393, 394, 398, 399, 400, 401, 402, 403, 406, 408, 409, 410, 412, 414, 416, 417,

Transcription factor family	Polynucleotide SEQ ID NO:
	418, 420, 422, 424, 425, 426, 475, 526, 529, 580, 591, 1901, 1902, 1937, 1941-1947, 1952, 1970-1972, 1976, 1980, 1990, 1993, 1999, 2000, 2006-2012, 2016-2020, 2023, 2031, 2040, 2050, 2053, 2055, 2062, 2064, 2066, 2068-2070, 2091-2100
Homeodomain zipper (HDZIP)	1, 5, 6, 14, 16, 20, 21, 22, 23, 30, 33, 41, 42, 47, 58, 59, 61, 68, 70, 71, 73, 75, 80, 86, 87, 90, 91, 93, 115, 119, 121, 126, 335, 339, 342, 352, 358, 363, 369, 377, 381, 388, 390, 396, 397, 415, 419, 421, 423, 2005, 2102
LIM domain	15, 18, 24, 43, 78, 81, 83, 198, 210, 225, 273, 378, 391, 433, 437, 450, 452
AP2 and EREBs	120, 124, 170, 171, 219, 220, 224, 226, 229, 230, 238, 242, 243, 245, 247, 256, 301, 320, 330, 432, 434, 435, 436, 445, 447, 451, 453, 454, 459, 466, 469, 476, 481, 490, 524, 546, 549, 570, 1895
Zinc finger domains of type Cys2His2	132, 146, 154, 180, 181, 182, 183, 191, 207, 227, 234, 288, 323, 324, 325, 326, 404, 535, 567, 584, 585, 586, 587, 589, 590
CCAAT box elements	155, 174, 266, 309, 431, 460, 484, 499, 542, 551, 574, 583
Other transcription factors	8, 38, 46, 48, 53, 56, 67, 85, 95, 99, 101, 109, 110, 113, 118, 122, 129, 130, 131, 134, 135, 137, 139, 140, 143, 1444, 145, 147, 149, 150, 151, 152, 153, 156, 158, 159, 160, 161, 162, 163, 164, 165, 166, 169, 172, 173, 175, 176, 177, 178, 186, 187, 188, 189, 190, 192, 193, 195, 196, 197, 199, 200, 201, 203, 204, 205, 208, 209, 211, 212, 213, 215, 216, 217, 218, 228, 231, 233, 235, 236, 237, 239, 240, 241, 251, 253, 257, 259, 260, 262, 263, 264, 267, 268, 269, 272, 275, 277, 287, 289, 291, 295, 296, 297, 298, 299, 300, 302, 304, 306, 307, 308, 310, 311, 312, 313, 314, 316, 321, 322, 327, 382, 395, 405, 407, 411, 413, 4127, 428, 429, 430, 438, 439, 440, 441, 442, 443, 444, 446, 449, 456, 457, 458, 461, 462, 464, 465, 467, 468, 471, 472, 474, 477, 478, 479, 480, 482, 487, 488, 489, 493, 495, 496, 498, 500, 505, 506, 509, 511, 513, 514, 516, 517, 522, 523, 525, 528, 530, 531,

Transcription factor family	Polynucleotide SEQ ID NO:
	532, 539, 543, 544, 547, 550, 552, 555, 556, 557, 560, 561, 562, 564, 565, 568, 569, 571, 573, 577, 578, 579, 581, 582, 448, 1183-1894, 1900, 1903, 1904, 1907, 1908-1912, 1933, 1956

The term "polynucleotide(s)," as used herein, means a single or double-stranded polymer of deoxyribonucleotide or ribonucleotide bases and includes DNA and corresponding RNA molecules, including HnRNA and mRNA molecules, both sense and anti-sense strands, and comprehends cDNA, genomic DNA and recombinant DNA, as well as wholly or partially synthesized polynucleotides. An HnRNA molecule contains introns and corresponds to a DNA molecule in a generally one-to-one manner. An mRNA molecule corresponds to an HnRNA and DNA molecule from which the introns have been excised. A polynucleotide may consist of an entire gene, or any portion thereof. Operable anti-sense polynucleotides may comprise a fragment of the corresponding polynucleotide, and the definition of "polynucleotide" therefore includes all such operable anti-sense fragments. Anti-sense polynucleotides and techniques involving anti-sense polynucleotides are well known in the art and are described, for example, in Robinson-Benion et al., "Antisense techniques," *Methods in Enzymol.* 254[23]: 363-375, 1995; and Kawasaki et al., *Artific. Organs* 20[8]:836-848, 1996.

The definition of the terms "complement", "reverse complement" and "reverse sequence", as used herein, is best illustrated by the following example. For the sequence 5' AGGACC 3', the complement, reverse complement and reverse sequence are as follows:

complement	3' TCCTGG 5'
reverse complement	3' GGTCCT 5'
reverse sequence	5' CCAGGA 3'.

The term "polypeptide", as used herein, encompasses amino acid chains of any length including full length proteins, wherein amino acid residues are linked by covalent peptide bonds. Polypeptides of the present invention may be naturally purified products, or may be produced partially or wholly using recombinant techniques. The term "polypeptide encoded by a polynucleotide" as used herein, includes polypeptides encoded

by a nucleotide sequence which includes the partial isolated DNA sequences of the present invention.

All of the polynucleotides and polypeptides described herein are isolated and purified, as those terms are commonly used in the art. Preferably, the polypeptides and polynucleotides are at least about 80% pure, more preferably at least about 90% pure, and most preferably at least about 99% pure.

Some of the polynucleotides of the present invention are "partial" sequences, in that they do not represent a full length gene encoding a full length polypeptide. Such partial sequences may be extended by analyzing and sequencing various DNA libraries using primers and/or probes and well known hybridization and/or PCR techniques. Partial sequences may be extended until an open reading frame encoding a polypeptide, a full length polynucleotide and/or gene capable of expressing a polypeptide, or another useful portion of the genome is identified. Such extended sequences, including full length polynucleotides and genes, are described as "corresponding to" a sequence identified as one of the sequences of SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or a variant thereof, or a portion of one of the sequences of SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or a variant thereof, when the extended polynucleotide comprises an identified sequence or its variant, or an identified contiguous portion (x-mer) of one of the sequences of SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or a variant thereof. Such extended polynucleotides may have a length of from about 50 to about 4,000 nucleic acids or base pairs, and preferably have a length of less than about 4,000 nucleic acids or base pairs, more preferably yet a length of less than about 3,000 nucleic acids or base pairs, more preferably yet a length of less than about 2,000 nucleic acids or base pairs. Under some circumstances, extended polynucleotides of the present invention may have a length of less than about 1,800 nucleic acids or base pairs, preferably less than about 1,600 nucleic acids or base pairs, more preferably less than about 1,400 nucleic acids or base pairs, more preferably yet less than about 1,200 nucleic acids or base pairs, and most preferably less than about 1,000 nucleic acids or base pairs.

Similarly, RNA sequences, reverse sequences, complementary sequences, antisense sequences, and the like, corresponding to the polynucleotides of the present invention, may be routinely ascertained and obtained using the cDNA sequences identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106.

The polynucleotides identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106 may contain open reading frames ("ORFs") or partial open reading frames encoding polypeptides. Open reading frames may be identified using techniques that are well known in the art. These techniques include, for example, analysis for the location of known start and stop codons, most likely reading frame identification based on codon frequencies, etc. Suitable tools and software for ORF analysis are available, for example, on the Internet at http://www.ncbi.nlm.nih.gov/gorf/gorf.html. Open reading frames and portions of open reading frames may be identified in the polynucleotides of the present invention. Once a partial open reading frame is identified, the polynucleotide may be extended in the area of the partial open reading frame using techniques that are well known in the art until the polynucleotide for the full open reading frame is identified. Thus, open reading frames encoding polypeptides may be identified using the polynucleotides of the present invention.

Once open reading frames are identified in the polynucleotides of the present invention, the open reading frames may be isolated and/or synthesized. Expressible genetic constructs comprising the open reading frames and suitable promoters, initiators, terminators, etc., which are well known in the art, may then be constructed. Such genetic constructs may be introduced into a host cell to express the polypeptide encoded by the open reading frame. Suitable host cells may include various prokaryotic and eukaryotic cells, including plant cells, mammalian cells, bacterial cells, algae and the like.

Polypeptides encoded by the polynucleotides of the present invention may be expressed and used in various assays to determine their biological activity. Such polypeptides may be used to raise antibodies, to isolate corresponding interacting proteins or other compounds, and to quantitatively determine levels of interacting proteins or other compounds.

As used herein, the term "variant" comprehends nucleotide or amino acid sequences different from the specifically identified sequences, wherein one or more nucleotides or amino acid residues is deleted, substituted, or added. Variants may be naturally occurring allelic variants, or non-naturally occurring variants. Variant sequences (polynucleotide or polypeptide) preferably exhibit at least 50%, more preferably at least 75%, and most preferably at least 90% identical residues to a sequence of the present invention. The percentage of identical residues is determined by aligning

the two sequences to be compared as described below, determining the number of identical residues in the aligned portion, dividing that number by the total number of residues in the inventive (queried) sequence, and multiplying the result by 100.

Polynucleotide and polypeptide sequences may be aligned, and percentage of identical residues in a specified region may be determined against another polynucleotide or polypeptide sequence, using computer algorithms that are publicly available. Two exemplary algorithms for aligning and identifying the similarity of polynucleotide sequences are the BLASTN and FASTA algorithms. Polynucleotides may also be analyzed using the BLASTX algorithm, which compares the six-frame conceptual translation products of a nucleotide query sequence (both strands) against a protein sequence database. The similarity of polypeptide sequences may be examined using the BLASTP algorithm. The BLASTN, BLASTX and BLASTP programs are available on the NCBI anonymous FTP server (ftp://ncbi.nlm.nih.gov) under /blast/executables/. The BLASTN algorithm Version 2.0.4 [Feb-24-1998] and Version 2.0.6 [Sept-16-1998], set to the default parameters described in the documentation and distributed with the algorithm, are preferred for use in the determination of polynucleotide variants according to the present invention. The BLASTP algorithm, is preferred for use in the determination of polypeptide variants according to the present invention. The use of the BLAST family of algorithms, including BLASTN, BLASTP, and BLASTX, is described at NCBI's Internet website at the URL http://www.ncbi.nlm.nih.gov/BLAST/newblast.html and in the publication of Altschul, Stephen F, et al., "Gapped BLAST and PSI-BLAST: a new generation of protein database search programs," *Nucleic Acids Res.* 25:3389-3402, 1997.

The computer algorithm FASTA is available on the Internet at the ftp site ftp://ftp.virginia.edu/pub/fasta/. Version 2.0u4 [February 1996], set to the default parameters described in the documentation and distributed with the algorithm, may be used in the determination of variants according to the present invention. The use of the FASTA algorithm is described in Pearson WR and Lipman DJ, "Improved tools for biological sequence analysis," *Proc. Natl. Acad. Sci. USA* 85:2444-2448, 1988; and Pearson WR, "Rapid and sensitive sequence comparison with FASTP and FASTA," *Methods in Enzymol.* 183:63-98, 1990.

The following running parameters are preferred for determination of alignments and similarities using BLASTN that contribute to the E values and percentage identity for polynucleotide sequences: Unix running command: blastall -p blastn -d embldb -e 10 –G0 -E0 -r 1 -v 30 -b 30 -i queryseq –o results; the parameters are: -p Program Name [String]; -d Database [String]; -e Expectation value (E) [Real]; -G Cost to open a gap (zero invokes default behavior) [Integer]; -E Cost to extend a gap (zero invokes default behavior) [Integer]; -r Reward for a nucleotide match (blastn only) [Integer]; -v Number of one-line descriptions (V) [Integer]; -b Number of alignments to show (B) [Integer]; -i Query File [File In]; and -o BLAST report Output File [File Out] Optional.

The following running parameters are preferred for determination of alignments and similarities using BLASTP that contribute to the E values and percentage identity of polypeptide sequences: blastall –p blastp –d swissprotdb –e 10 -G 0 -E 0 –v 30 –b 30 –i queryseq –o results; wherein the parameters are: -p Program Name [String]; -d Database [String]; -e Expectation value (E) [Real]; -G Cost to open a gap (zero invokes default behavior) [Integer]; -E Cost to extend a gap (zero invokes default behavior) [Integer]; -v Number of one-line descriptions (v) [Integer]; -b Number of alignments to show (b) [Integer]; -I Query File [File In]; -o BLAST report Output File [File Out] Optional.

The "hits" to one or more database sequences by a queried sequence produced by BLASTN, FASTA, BLASTP or a similar algorithm, align and identify similar portions of sequences. The hits are arranged in order of the degree of similarity and the length of sequence overlap. Hits to a database sequence generally represent an overlap over only a fraction of the sequence length of the queried sequence.

The BLASTN, FASTA and BLASTP algorithms also produce "Expect" values for alignments. The Expect value (E) indicates the number of hits one can "expect" to see over a certain number of contiguous sequences by chance when searching a database of a certain size. The Expect value is used as a significance threshold for determining whether the hit to a database, such as the preferred EMBL database, indicates true similarity. For example, an E value of 0.1 assigned to a polynucleotide hit is interpreted as meaning that in a database of the size of the EMBL database, one might expect to see 0.1 matches over the aligned portion of the sequence with a similar score simply by chance. By this criterion, the aligned and matched portions of the polynucleotide sequences then have a probability of 90% of being the same. For sequences having an E value of 0.01 or less

over aligned and matched portions, the probability of finding a match by chance in the EMBL database is 1% or less using the BLASTN or FASTA algorithm.

According to one embodiment, "variant" polynucleotides and polypeptides, with reference to each of the polynucleotides and polypeptides of the present invention, preferably comprise sequences having the same number or fewer nucleic or amino acids than each of the polynucleotides or polypeptides of the present invention and producing an E value of 0.01 or less when compared to the polynucleotide or polypeptide of the present invention. That is, a variant polynucleotide or polypeptide is any sequence that has at least a 99% probability of being the same as the polynucleotide or polypeptide of the present invention, measured as having an E value of 0.01 or less using the BLASTN, FASTA, or BLASTP algorithms set at parameters described above.

Alternatively, variant polynucleotides of the present invention hybridize to the polynucleotide sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or complements, reverse sequences, or reverse complements of those sequences, under stringent conditions. As used herein, "stringent conditions" refers to prewashing in a solution of 6X SSC, 0.2% SDS; hybridizing at 65°C, 6X SSC, 0.2% SDS overnight; followed by two washes of 30 minutes each in 1X SSC, 0.1% SDS at 65°C and two washes of 30 minutes each in 0.2X SSC, 0.1% SDS at 65°C.

The present invention also encompasses polynucleotides that differ from the disclosed sequences but that, as a consequence of the degeneracy of the genetic code, encode a polypeptide which is the same as that encoded by a polynucleotide of the present invention. Thus, polynucleotides comprising sequences that differ from the polynucleotide sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106; or complements, reverse sequences, or reverse complements thereof, as a result of conservative substitutions are contemplated by and encompassed within the present invention. Additionally, polynucleotides comprising sequences that differ from the polynucleotide sequences recited in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or complements, reverse complements or reverse sequences thereof, as a result of deletions and/or insertions totaling less than 10% of the total sequence length are also contemplated by and encompassed within the present invention. Similarly, polypeptides comprising sequences that differ from the polypeptide sequences recited in SEQ ID NOS: 592-1182, 1913-1930 and 2107-2278, as a result of amino acid substitutions, insertions, and/or

deletions totaling less than 10% of the total sequence length are contemplated by and encompassed within the present invention. In certain embodiments, variants of the inventive polypeptides possess biological activities that are the same or similar to those of the inventive polypeptides. Such variant polypeptides function as transcription factors and are thus capable of modifying gene expression in a plant. Similarly, variant polynucleotides may encode polypeptides that function as transcription factors.

Polynucleotides of the present invention also comprehend polynucleotides comprising at least a specified number of contiguous residues (x-mers) of any of the polynucleotides identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, complements, reverse sequences, and reverse complements of such sequences, and their variants. Similarly, polypeptides of the present invention comprehend polypeptides comprising at least a specified number of contiguous residues (x-mers) of any of the polypeptides identified as SEQ ID NOS: 592-1182, 1913-1930 and 2107-2278, and their variants. As used herein, the term "x-mer," with reference to a specific value of "x," refers to a sequence comprising at least a specified number ("x") of contiguous residues of any of the polynucleotides identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or the polypeptides identified as SEQ ID NOS: 592-1182, 1913-1930 and 2107-2278. According to preferred embodiments, the value of x is preferably at least 20, more preferably at least 40, more preferably yet at least 60, and most preferably at least 80. Thus, polynucleotides and polypeptides of the present invention comprise a 20-mer, a 40-mer, a 60-mer, an 80-mer, a 100-mer, a 120-mer, a 150-mer, a 180-mer, a 220-mer, a 250-mer, a 300-mer, a 400-mer, a 500-mer or a 600-mer of a polynucleotide or polypeptide identified as SEQ ID NOS: 1-2368, and variants thereof.

The inventive polynucleotides may be isolated by high throughput sequencing of cDNA libraries prepared from *Eucalyptus grandis* and *Pinus radiata* as described below in Examples 1 and 2. Alternatively, oligonucleotides based on the sequences provided in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106 may be prepared as detailed below and used to identify positive clones in either cDNA or genomic DNA libraries from *Eucalyptus grandis* and *Pinus radiata* by means of hybridization or PCR techniques. Hybridization and PCR techniques suitable for use with such oligonucleotides are well known in the art, and include those taught by Sambrook et al., *Ibid.* Positive clones may be analyzed by restriction enzyme digestion, DNA sequencing or the like.

The polynucleotides of the present invention may alternatively be synthesized using techniques that are well known in the art. The polynucleotides may be synthesized, for example, using automated oligonucleotide synthesizers (*e.g.*, Beckman Oligo 1000M DNA Synthesizer) to obtain polynucleotide segments of up to 50 or more nucleic acids. A plurality of such polynucleotide segments may then be ligated using standard DNA manipulation techniques that are well known in the art of molecular biology. One conventional and exemplary polynucleotide synthesis technique involves synthesis of a single stranded polynucleotide segment having, for example, 80 nucleic acids, and hybridizing that segment to a synthesized complementary 85 nucleic acid segment to produce a 5 nucleotide overhang. The next segment may then be synthesized in a similar fashion, with a 5 nucleotide overhang on the opposite strand. The "sticky" ends ensure proper ligation when the two portions are hybridized. In this way, a complete polynucleotide of the present invention may be synthesized entirely *in vitro*.

In one embodiment, the DNA constructs of the present invention include an open reading frame coding for at least a functional portion of a polypeptide of the present invention or a variant thereof. As used herein, the "functional portion" of a polypeptide is that portion which contains the active site essential for regulating gene expression, *i.e.*, the portion of the molecule that is capable of binding to, or interacting with, the promoter of the gene to be expressed. The DNA-binding domain(s) for certain of the inventive polypeptides are identified below in Table 2. These DNA binding domains were identified using PROSITE 15.0 pattern or profile sequences as listed in the PROSITE database. PROSITE is available at http://www.expasy.ch/sprot/prosite.html and its use is described in Hofman et al., *Nucleic Acids Res.* 27:215-219, 1999; and in Bairoch, *Nucleic Acids Res.* 20:Suppl.2013-2018, 1992.

TABLE 2

Polynucleotide SEQ ID NO:	DNA-binding Domain(s) SEQ ID NO:
1931	2283
1934	2284, 2285
1940	2288
1949	2293
1951	2279, 2280
1953	2296, 2297
1957	2298

Polynucleotide SEQ ID NO:	DNA-binding Domain(s) SEQ ID NO:
1960	2301, 2302
1962	2307
1965	2308, 2309
1967	2281, 2282
1978	2320
1979	2321
1982	2322, 2323
1986	2324
1992	2335
1994	2336, 2337
1995	2338, 2339
1997	2340
2003	2286, 2287
2013	2289, 2290
2020	2291, 2292
2027	2299, 2300
2030	2303, 2304
2032	2305, 2306
2036	2310, 2311
2038	2312, 2313
2049	2314, 2315
2051	2316, 2317
2052	2318, 2319
2057	2325, 2326
2059	2327, 2328
2060	2329, 2330
2065	2331, 2332
2067	2333, 2334
2074	2342, 2343
2075	2344, 2345
2076	2346, 2347
2077	2348, 2349
2080	2352
2081	2353
2082	2354
2083	2355, 2356
2084	2357, 2358
2085	2359, 2360
2086	2361, 2362
2087	2365, 2366
2088	2367, 2368
2104	2350, 2351
2105	2363, 2364

The functional portion of a polypeptide may also be determined by targeted mutagenesis and screening of modified protein products with protocols well known in the art (Solano et al., *J. Biol. Chem.* 272:2889-95, 1997). The active site will generally exhibit high substrate specificity. Portions of the inventive polypeptides may be generated by synthetic or recombinant means. Synthetic polypeptides having fewer than about 100 amino acids, and generally fewer than about 50 amino acids, may be generated using techniques well known to those of ordinary skill in the art. For example, such polypeptides may be synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. *See* Merrifield, *J. Am. Chem. Soc.* 85:2149-2154, 1963. Equipment for automated synthesis of polypeptides is commercially available from suppliers such as Perkin Elmer/Applied BioSystems, Inc. (Foster City, CA), and may be operated according to the manufacturer's instructions.

An open reading frame may be inserted in the DNA construct in a sense or antisense orientation, such that transformation of a target plant with the DNA construct will lead to a change in the amount of polypeptide compared to the wild-type plant. Transformation with a DNA construct comprising an open reading frame in a sense orientation will generally result in over-expression of the selected gene, while transformation with a DNA construct comprising an open reading frame in an antisense orientation will generally result in reduced expression of the selected gene. A population of plants transformed with a DNA construct comprising an open reading frame of the present invention in either a sense or antisense orientation may be screened for increased or reduced expression of the gene in question using techniques well known to those of skill in the art, and plants having the desired phenotypes may thus be isolated.

Alternatively, expression of a gene encoding a plant transcription factor may be inhibited by inserting a portion of an open reading frame of the present invention, in either sense or antisense orientation, in the DNA construct. Such portions need not be full-length but preferably comprise at least 25 and more preferably at least 50 residues of an inventive DNA sequence. A much longer portion or even the full length DNA corresponding to the complete open reading frame may be employed. The portion of the open reading frame does not need to be precisely the same as the endogenous sequence, provided that there is sufficient sequence similarity to achieve inhibition of the target

gene. Thus a sequence derived from one species may be used to inhibit expression of a gene in a different species.

In another embodiment, the inventive DNA constructs comprise a DNA sequence including an untranslated, or non-coding, region of a gene coding for a polypeptide of the present invention, or a DNA sequence complementary to such an untranslated region. Examples of untranslated regions which may be usefully employed in such constructs include introns and 5'-untranslated leader sequences. Transformation of a target plant with such a DNA construct may lead to a reduction in the amount of the polypeptide expressed in the plant by the process of cosuppression, in a manner similar to that discussed, for example, by Napoli et al. (*Plant Cell* 2:279-290, 1990), and de Carvalho Niebel et al. (*Plant Cell* 7:347-358, 1995).

Alternatively, regulation of polypeptide expression can be achieved by inserting appropriate sequences or subsequences (*e.g.* DNA or RNA) in ribozyme constructs (McIntyre and Manners, *Transgenic Res.* 5[4]:257-262, 1996). Ribozymes are synthetic RNA molecules that comprise a hybridizing region complementary to two regions, each of which comprises at least 5 contiguous nucleotides in a mRNA molecule encoded by one of the inventive polynucleotides. Ribozymes possess highly specific endonuclease activity, which autocatalytically cleaves the mRNA.

The DNA constructs of the present invention further comprise a gene promoter sequence and a gene termination sequence, operably linked to the DNA sequence to be transcribed, which control expression of the gene. The gene promoter sequence is generally positioned at the 5' end of the DNA sequence to be transcribed, and is employed to initiate transcription of the DNA sequence. Gene promoter sequences are generally found in the 5' untranslated region of a gene but they may exist downstream of the open reading frame, in introns (Luehrsen, *Mol. Gen. Genet.* 225:81-93, 1991) or in the coding region, as for example in a plant defence gene (Douglas et al., *EMBO J.* 10:1767-1775, 1991). When the construct includes an open reading frame in a sense orientation, the gene promoter sequence also initiates translation of the open reading frame. For DNA constructs comprising either an open reading frame in an antisense orientation or an untranslated region, the gene promoter sequence may consist only of a transcription initiation site having a RNA polymerase binding site.

A variety of gene promoter sequences which may be usefully employed in the DNA constructs of the present invention are well known in the art. The gene promoter sequence, and also the gene termination sequence, may be endogenous to the target plant host or may be exogenous, provided the promoter is functional in the target host. For example, the promoter and termination sequences may be from other plant species, plant viruses, bacterial plasmids and the like. Preferably, gene promoter and termination sequences are from the inventive sequences themselves.

Factors influencing the choice of promoter include the desired tissue specificity of the construct, and the timing of transcription and translation. For example, constitutive promoters, such as the 35S Cauliflower Mosaic Virus (CaMV 35S) promoter, will affect the activity of the enzyme in all parts of the plant. Use of a tissue specific promoter will result in production of the desired sense or antisense RNA only in the tissue of interest. With DNA constructs employing inducible gene promoter sequences, the rate of RNA polymerase binding and initiation can be modulated by external stimuli, such as light, heat, anaerobic stress, alteration in nutrient conditions and the like. Temporally regulated promoters can be employed to effect modulation of the rate of RNA polymerase binding and initiation at a specific time during development of a transformed cell. Preferably, the original promoters from the enzyme gene in question, or promoters from a specific tissue-targeted gene in the organism to be transformed, such as eucalyptus or pine are used. Other examples of gene promoters which may be usefully employed in the present invention include mannopine synthase (mas), octopine synthase (ocs) and those reviewed by Chua et al. (*Science* 244:174-181, 1989).

The gene termination sequence, which is located 3' to the DNA sequence to be transcribed, may come from the same gene as the gene promoter sequence or may be from a different gene. Many gene termination sequences known in the art may be usefully employed in the present invention, such as the 3' end of the *Agrobacterium tumefaciens* nopaline synthase gene. However, preferred gene terminator sequences are those from the original gene or from the target species to be transformed.

The DNA constructs of the present invention may also contain a selection marker that is effective in cells of the target organism, such as a plant, to allow for the detection of transformed cells containing the inventive construct. Such markers, which are well known in the art, typically confer resistance to one or more toxins. One example of such

a marker is the NPTII gene whose expression results in resistance to kanamycin or hygromycin, antibiotics which are usually toxic to plant cells at a moderate concentration (Rogers et al., *in* Weissbach, A and Weissbach H, eds., *Methods for Plant Molecular Biology*, Academic Press Inc.: San Diego, CA, 1988). Transformed cells can thus be identified by their ability to grow in media containing the antibiotic in question. Alternatively, the presence of the desired construct in transformed cells can be determined by means of other techniques well known in the art, such as Southern and Western blots.

A transcription initiation site is additionally included in the DNA construct when the sequence to be transcribed lacks such a site.

Techniques for operatively linking the components of the inventive DNA constructs are well known in the art and include the use of synthetic linkers containing one or more restriction endonuclease sites as described, for example, by Sambrook et al., (*Molecular cloning: a laboratory manual*, CSHL Press: Cold Spring Harbor, NY, 1989). The DNA construct of the present invention may be linked to a vector having at least one replication system, for example *E. coli*, whereby after each manipulation, the resulting construct can be cloned and sequenced and the correctness of the manipulation determined.

The DNA constructs of the present invention may be used to transform a variety of target organisms including, but not limited to, plants. Plants which may be transformed using the inventive constructs include both monocotyledonous angiosperms (*e.g.,* grasses, corn, grains, oat, wheat and barley); and dicotyledonous angiosperms (*e.g., Arabidopsis,* tobacco, legumes, alfalfa, oaks, eucalyptus, maple); and Gymnosperms (*e.g.,* Scots pine (Aronen, *Finnish Forest Res. Papers*, Vol. 595, 1996); white spruce (Ellis et al., *Biotechnology* 11:84-89, 1993); and larch (Huang et al., *In Vitro Cell* 27:201-207, 1991). In a preferred embodiment, the inventive DNA constructs are employed to transform woody plants, herein defined as a tree or shrub whose stem lives for a number of years and increases in diameter each year by the addition of woody tissue. Preferably the target plant is selected from the group consisting of eucalyptus and pine species, most preferably from the group consisting of *Eucalyptus grandis* and *Pinus radiata*. Other species which may be usefully transformed with the DNA constructs of the present invention include, but are not limited to: pines such as *Pinus banksiana, Pinus brutia,*

Pinus caribaea, Pinus clausa, Pinus contorta, Pinus coulteri, Pinus echinata, Pinus eldarica, Pinus ellioti, Pinus jeffreyi, Pinus lambertiana, Pinus monticola, Pinus nigra, Pinus palustrus, Pinus pinaster, Pinus ponderosa, Pinus resinosa, Pinus rigida, Pinus serotina, Pinus strobus, Pinus sylvestris, Pinus taeda, Pinus virginiana; other gymnosperms, such as *Abies amabilis, Abies balsamea, Abies concolor, Abies grandis, Abies lasiocarpa, Abies magnifica, Abies procera, Chamaecyparis lawsoniona, Chamaecyparis nootkatensis, Chamaecyparis thyoides, Huniperus virginiana, Larix decidua, Larix laricina, Larix leptolepis, Larix occidentalis, Larix siberica, Libocedrus decurrens, Picea abies, Picea engelmanni, Picea glauca, Picea mariana, Picea pungens, Picea rubens, Picea sitchensis, Pseudotsuga menziesii, Sequoia gigantea, Sequoia sempervirens, Taxodium distichum, Tsuga canadensis, Tsuga heterophylla, Tsuga mertensiana, Thuja occidentalis, Thuja plicata*; and Eucalypts, such as *Eucalyptus alba, Eucalyptus bancroftii, Eucalyptus botyroides, Eucalyptus bridgesiana, Eucalyptus calophylla, Eucalyptus camaldulensis, Eucalyptus citriodora, Eucalyptus cladocalyx, Eucalyptus coccifera, Eucalyptus curtisii, Eucalyptus dalrympleana, Eucalyptus deglupta, Eucalyptus delagatensis, Eucalyptus diversicolor, Eucalyptus dunnii, Eucalyptus ficifolia, Eucalyptus globulus, Eucalyptus gomphocephala, Eucalyptus gunnii, Eucalyptus henryi, Eucalyptus laevopinea, Eucalyptus macarthurii, Eucalyptus macrorhyncha, Eucalyptus maculata, Eucalyptus marginata, Eucalyptus megacarpa, Eucalyptus melliodora, Eucalyptus nicholii, Eucalyptus nitens, Eucalyptus nova-anglica, Eucalyptus obliqua, Eucalyptus obtusiflora, Eucalyptus oreades, Eucalyptus pauciflora, Eucalyptus polybractea, Eucalyptus regnans, Eucalyptus resinifera, Eucalyptus robusta, Eucalyptus rudis, Eucalyptus saligna, Eucalyptus sideroxylon, Eucalyptus stuartiana, Eucalyptus tereticornis, Eucalyptus torelliana, Eucalyptus urnigera, Eucalyptus urophylla, Eucalyptus viminalis, Eucalyptus viridis, Eucalyptus wandoo* and *Eucalyptus youmanni*; and hybrids of any of these species.

Techniques for stably incorporating DNA constructs into the genome of target plants are well known in the art and include *Agrobacterium tumefaciens* mediated introduction, electroporation, protoplast fusion, injection into reproductive organs, injection into immature embryos, high velocity projectile introduction and the like. The choice of technique will depend upon the target plant to be transformed. For example, dicotyledonous plants and certain monocots and gymnosperms may be transformed by

Agrobacterium Ti plasmid technology, as described, for example by Bevan (*Nucleic Acids Res.* 12:8711-8721, 1984). Targets for the introduction of the DNA constructs of the present invention include tissues, such as leaf tissue, dissociated cells, protoplasts, seeds, embryos, meristematic regions; cotyledons, hypocotyls, and the like. The preferred method for transforming eucalyptus and pine is a biolistic method using pollen (*see*, for example, Aronen, in *Finnish Forest Res. Papers* 595:53, 1996) or easily regenerable embryonic tissues.

Once the cells are transformed, cells having the inventive DNA construct incorporated in their genome may be selected by means of a marker, such as the kanamycin resistance marker discussed above. Transgenic cells may then be cultured in an appropriate medium to regenerate whole plants, using techniques well known in the art. In the case of protoplasts, the cell wall is allowed to reform under appropriate osmotic conditions. In the case of seeds or embryos, an appropriate germination or callus initiation medium is employed. For explants, an appropriate regeneration medium is used. Regeneration of plants is well established for many species. For a review of regeneration of forest trees see Dunstan et al., "Somatic embryogenesis in woody plants," *in* Thorpe TA, ed., *In vitro embryogenesis of plants* (Current Plant Science and Biotechnology in Agriculture, 20[12]:471-540, 1995. Specific protocols for the regeneration of spruce are discussed by Roberts et al. ("Somatic embryogenesis of spruce," *in* Redenbaugh K, ed., *Synseed: applications of synthetic seed to crop improvement,* CRC Press: 23:427-449, 1993). Transformed plants having the desired phenotype may be selected using techniques well known in the art. The resulting transformed plants may be reproduced sexually or asexually, using methods well known in the art, to give successive generations of transgenic plants.

As discussed above, the production of RNA in target cells can be controlled by choice of the promoter sequence, or by selecting the number of functional copies or the site of integration of the DNA sequences incorporated into the genome of the target host. A target organism may be transformed with more than one DNA construct of the present invention, thereby modulating the activity of more than one transcription factor, for example affecting gene expression in more than one tissue, or at more than one time in the development of the target organism. Similarly, a DNA construct may be assembled containing more than one open reading frame coding for a polypeptide of the present

invention or more than one untranslated region of a gene coding for such a polypeptide. The polynucleotides of the present inventive may also be employed in combination with other known sequences encoding transcription factors.

The isolated polynucleotides of the present invention also have utility in genome mapping, in physical mapping, and in positional cloning of genes. As detailed below, the polynucleotide sequences identified as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, and their variants, may be used to design oligonucleotide probes and primers. Oligonucleotide probes designed using the polynucleotides of the present invention may be used to detect the presence and examine the expression patterns of genes in any organism having sufficiently similar DNA and RNA sequences in their cells using techniques that are well known in the art, such as slot blot DNA hybridization techniques. Oligonucleotide primers designed using the polynucleotides of the present invention may be used for PCR amplifications. Oligonucleotide probes and primers designed using the polynucleotides of the present invention may also be used in connection with various microarray technologies, including the microarray technology of Synteni (Palo Alto, California).

As used herein, the term "oligonucleotide" refers to a relatively short segment of a polynucleotide sequence, generally comprising between 6 and 60 nucleotides, and comprehends both probes for use in hybridization assays and primers for use in the amplification of DNA by polymerase chain reaction.

An oligonucleotide probe or primer is described as "corresponding to" a polynucleotide of the present invention, including one of the sequences set out as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or a variant thereof, if the oligonucleotide probe or primer, or its complement, is contained within one of the sequences set out as SEQ ID NOS: 1-591, 1183-1912 and 1931-2106, or a variant of one of the specified sequences. Oligonucleotide probes and primers of the present invention are substantially complementary to a polynucleotide disclosed herein.

Two single stranded sequences are said to be substantially complementary when the nucleotides of one strand, optimally aligned and compared, with the appropriate nucleotide insertions and/or deletions, pair with at least 80%, preferably at least 90% to 95% and more preferably at least 98% to 100% of the nucleotides of the other strand. Alternatively, substantial complementarity exists when a first DNA strand will selectively

hybridize to a second DNA strand under stringent hybridization conditions. Stringent hybridization conditions for determining complementarity include salt conditions of less than about 1 M, more usually less than about 500 mM, and preferably less than about 200 mM. Hybridization temperatures can be as low as 5°C, but are generally greater than about 22°C, more preferably greater than about 30°C, and most preferably greater than about 37°C. Longer DNA fragments may require higher hybridization temperatures for specific hybridization. Since the stringency of hybridization may be affected by other factors such as probe composition, presence of organic solvents and extent of base mismatching, the combination of parameters is more important than the absolute measure of any one alone.

In specific embodiments, the oligonucleotide probes and/or primers comprise at least about 6 contiguous residues, more preferably at least about 10 contiguous residues, and most preferably at least about 20 contiguous residues complementary to a polynucleotide sequence of the present invention. Probes and primers of the present invention may be from about 8 to 100 base pairs in length or, preferably from about 10 to 50 base pairs in length or, more preferably from about 15 to 40 base pairs in length. The probes can be easily selected using procedures well known in the art, taking into account DNA-DNA hybridization stringencies, annealing and melting temperatures, and potential for formation of loops and other factors, which are well known in the art. Tools and software suitable for designing probes, and especially suitable for designing PCR primers, are available on the Internet, for example, at URL http://www.horizonpress.com/pcr/. Preferred techniques for designing PCR primers are also disclosed in Dieffenbach and Dyksler, *PCR primer: a laboratory manual*, CSHL Press: Cold Spring Harbor, NY, 1995.

A plurality of oligonucleotide probes or primers corresponding to a polynucleotide of the present invention may be provided in a kit form. Such kits generally comprise multiple DNA or oligonucleotide probes, each probe being specific for a polynucleotide sequence. Kits of the present invention may comprise one or more probes or primers corresponding to a polynucleotide of the present invention, including a polynucleotide sequence identified in SEQ ID NOS: 1-591, 1183-1912 and 1931-2106.

In one embodiment useful for high-throughput assays, the oligonucleotide probe kits of the present invention comprise multiple probes in an array format, wherein each probe is immobilized at a predefined, spatially addressable location on the surface of a

solid substrate. Array formats which may be usefully employed in the present invention are disclosed, for example, in U.S. Patents Nos. 5,412,087 and 5,545,451; and PCT Publication No. WO 95/00450, the disclosures of which are hereby incorporated by reference.

The polynucleotides of the present invention may also be used to tag or identify an organism or reproductive material therefrom. Such tagging may be accomplished, for example, by stably introducing a non-disruptive non-functional heterologous polynucleotide identifier into an organism, the polynucleotide comprising one of the polynucleotides of the present invention.

The following examples are offered by way of illustration and not by way of limitation.

EXAMPLE 1

Isolation and Characterization of cDNA Clones from *Eucalyptus grandis*

Nine *Eucalyptus grandis* cDNA expression libraries (prepared from either mature shoot buds, early wood phloem, floral tissue, leaf tissue (two independent libraries), feeder roots, structural roots, xylem or early wood xylem) were constructed and screened as follows.

Total RNA was extracted from the plant tissue using the protocol of Chang et al. (*Plant Molecular Biology Reporter* 11:113-116, 1993). mRNA was isolated from the total RNA preparation using either a Poly(A) Quik mRNA Isolation Kit (Stratagene, La Jolla, CA) or Dynal Beads Oligo $(dT)_{25}$ (Dynal, Skogen, Norway). A cDNA expression library was constructed from the purified mRNA by reverse transcriptase synthesis followed by insertion of the resulting cDNA clones in Lambda ZAP using a ZAP Express cDNA Synthesis Kit (Stratagene), according to the manufacturer's protocol. The resulting cDNAs were packaged using a Gigapack II Packaging Extract (Stratagene) using an aliquot (1 – 5 μl) from the 5 μl ligation reaction dependent upon the library. Mass excision of the library was done using XL1-Blue MRF' cells and XLOLR cells (Stratagene) with ExAssist helper phage (Stratagene). The excised phagemids were diluted with NZY broth (Gibco BRL, Gaithersburg, MD) and plated out onto LB-kanamycin agar plates containing X-gal and isopropylthio-beta-galactoside (IPTG).

Of the colonies plated and picked for DNA miniprep, 99% contained an insert suitable for sequencing. Positive colonies were cultured in NZY broth with kanamycin and cDNA was purified by means of alkaline lysis and polyethylene glycol (PEG) precipitation. Agarose gel at 1% was used to screen sequencing templates for chromosomal contamination. Dye primer sequences were prepared using a Turbo Catalyst 800 machine (Perkin Elmer/Applied Biosystems Division, Foster City, CA) according to the manufacturer's protocol.

DNA sequence for positive clones was obtained using a Perkin Elmer/Applied Biosystems Division Prism 377 sequencer. cDNA clones were sequenced first from the 5' end and, in some cases, also from the 3' end. For some clones, internal sequence was obtained using either Exonuclease III deletion analysis, yielding a library of differentially sized subclones in pBK-CMV, or by direct sequencing using gene-specific primers designed to identified regions of the gene of interest.

The determined cDNA sequences were compared to known sequences in the EMBL database (up to mid-July 1999) using the computer algorithms FASTA and/or BLASTN. Multiple alignments of redundant sequences were used to build up reliable consensus sequences. The determined cDNA sequences are provided in SEQ ID NOS: 1-331, 1183-1536, 1896-1901, 1905, 1906, 1908-1910, 1932-1968, 2001-2036, 2074-2079 and 2104. Based on similarity to known sequences from other plant species, the isolated DNA sequences were identified as encoding transcription factors, as detailed in Table 1 above. The predicted amino acid sequences corresponding to the DNA sequences of SEQ ID NOS: 1-331, 1896-1901, 1905, 1906, 1908, 1909, 1910, 1932-1968, 2001-2036, 2074-2079 and 2104 are provided in SEQ ID NOS: 592-922, 1914-1919, 1923, 1924, 1926-1928, 2108-2142, 2175-2210, 2247-2252 and 2276, respectively.

EXAMPLE 2

Isolation and Characterization of cDNA Clones from *Pinus radiata*

Fourteen *Pinus radiata* cDNA expression libraries (prepared from either shoot bud tissue, suspension cultured cells, early wood phloem (two independent libraries), fascicle meristem tissue, male strobilus, root (unknown lineage), feeder roots, structural

roots, female strobilus, cone primordia, female receptive cones and xylem (two independent libraries)) were constructed and screened as described above in Example 1.

DNA sequence for positive clones was obtained using forward and reverse primers on a Perkin Elmer/Applied Biosystems Division Prism 377 sequencer and the determined sequences were compared to known sequences in the database as described above.

Based on similarity to known sequences from other plant species, the isolated DNA sequences (SEQ ID NOS: 332-591, 1537-1894, 1895, 1902-1904, 1907, 1911, 1912, 1931, 1969-2000, 2037-2073, 2080-2103, 2105 and 2106) were identified as encoding transcription factors as detailed above in Table 1. The predicted amino acid sequences corresponding to the DNA sequences of SEQ ID NOS: 332-591, 1895, 1902-1904, 1907, 1911, 1912, 1931, 1969-2000, 2037-2073, 2080-2103, 2105 and 2106 are provided in SEQ ID NOS: 923-1182, 1913, 1920-1922, 1925, 1929-1930, 2107, 2143-2174, 2211-2246, 2253-2275, 2277 and 2278, respectively.

EXAMPLE 3

Use of a Myb Transcription Factor Gene to Modify Gene Expression in Plants

Transformation of tobacco plants with a *Eucalyptus grandis* Myb transcription factor gene is performed as follows. DNA constructs comprising sense and anti-sense constructs containing a DNA sequence including the coding region of the Myb transcription factor of SEQ ID NO: 2076 are constructed and inserted into *Agrobacterium tumefaciens* by direct transformation using published methods (*see* An G, Ebert PR, Mitra A, Ha SB, "Binary vectors," *in* Gelvin SB and Schilperoort RA, eds., *Plant Molecular Biology Manual*, Kluwer Academic Publishers: Dordrecht, 1988). The constructs of sense DNAs are made by direct cloning from PBK-CMV plasmid by cloning cDNA insert into pART7 plasmid, which is then cut by NotI enzyme and 35S-Insert-OCS 3'UTR put into pART27 plant expression vector (*see* Gleave, *Plant Molecular Biology* 20:1203-1207, 1992). The presence and integrity of the transgenic constructs are verified by restriction digestion and DNA sequencing.

Tobacco (*Nicotiana tabacum* cv. Samsun) leaf sections are transformed with the sense and anti-sense constructs using the method of Horsch et al. (*Science* 227:1229-

1231, 1985). *Arabidopsis thaliana* (ecotype: Columbia) whole plants are transformed with the sense and anti-sense constructs using either the vacuum infiltration (Bechtold et al., *C.R. Acad.* 316:1194-1199, 1992), or floral dip (Clough and Bent, *The Plant Journal* 16:735-743, 1998) procedures. Transformed plants containing the appropriate construct are verified using Southern blot experiments. Expression of the *Eucalyptus* Myb transcription factor gene in transformed plants is confirmed by isolating total RNA from each independent transformed plant line created with the Myb transcription factor gene sense and anti-sense constructs. The RNA samples are analysed in Northern blot experiments to determine the level of expression of the transgene in each transformed line. The expression level of the Myb transcription factor, encoded by the *Eucalyptus* Myb transcription factor gene and by the endogenous Myb transcription factor gene, for each transformed plant line created with the sense and anti-sense constructs is compared to that of wild-type control plants.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, changes and modifications can be carried out without departing from the scope of the invention which is intended to be limited only by the scope of the claims.

Claims:

1. An isolated polynucleotide comprising a sequence selected from the group consisting of sequences provided in SEQ ID NO: 1-591, 1183-1912 and 1931-2106.
2. An isolated polynucleotide comprising a sequence selected from the group consisting of:
   (a) complements of the sequence recited in SEQ ID NO: 1-591, 1183-1912 and 1931-2106;
   (b) reverse complements of the sequence recited in SEQ ID NO: 1-591, 1183-1912 and 1931-2106; and
   (c) reverse sequences of the sequences recited in SEQ ID NO: 1-591, 1183-1912 and 1931-2106.
3. An isolated polynucleotide comprising a sequence having at least 40% identical nucleotides to a sequence provided in SEQ ID NO: 1-8, 10, 11, 14-16, 21-23, 25, 26, 28, 29, 32-38, 41-67, 69-92, 95, 97-100, 102-105, 107-118, 120, 122, 124-130, 133-136, 138, 139, 141-148, 150-154, 156-164, 166, 167, 169-174, 176-217, 219-225, 227-232, 234-239, 241-245, 247-251, 253-267, 269-279, 281, 284-338, 341, 343-346, 348-351, 353, 356-359, 362, 365-367, 370-372, 375-378, 381-385, 387-393, 395-397, 399-404, 406, 407, 409-413, 415, 417-419, 421-436, 438-441, 443-452, 454, 455, 457-459, 461-468, 470-478, 480-487, 489-498, 500, 501, 503, 504, 506-516, 519-524, 527-538, 540-542, 544-579, 581-591, 1895-1902, 1904-1912, 1931-1934, 1938-1941, 1943-1956, 1958-1960, 1962-1964, 1966, 1967, 1969, 1972-1978, 1980, 1981, 1983-1998, 2000-2006, 2008-2010, 2013-2015, 2018, 2020-2038, 2041-2056, 2058-2063, 2065-2069, 2072-2086, 2088-2091, 2096-2098, 2100 and 2102-2105 as determined using the computer algorithm BLASTN.
4. An isolated polynucleotide comprising a sequence having at least 60% identical nucleotides to a sequence provided in SEQ ID NO: 1-16, 18-26, 28-38, 41-92, 95-118, 120, 122-164, 166, 167, 169-174, 176-217, 219-232, 234-281, 283-338, 341, 343-346, 348-353, 356-359, 362, 365-367, 369-372, 375-379, 381-385, 387-397, 399-407, 409-413, 415, 417-419, 421-436, 438-455, 457-468, 470-478, 480-501, 503, 504, 506-525, 527-538, 540-542, 544-579, 581-591, 1895-1902, 1904-1912, 1931-1941, 1943-1969, 1972-1981, 1983-1998, 2000-2010, 2013-2018, 2020-

2039, 2041-2056, 2058-2063, 2065-2069, 2072-2091, 2096-2098, 2100 and 2102-2015 as determined using the computer algorithm BLASTN.

5. An isolated polynucleotide comprising a sequence having at least 75% identical nucleotides to a sequence provided in SEQ ID NO: 1-16, 18-38, 41-164, 166-167, 169-339, 341, 343-346, 348-353, 356-359, 362-363, 365-372, 375-385, 387-407, 409-415, 417-419, 421-455, 457-468, 470-501, 503-504, 506-525, 527-538, 540-579, 581-591, 1895-1902, 1904-1912, 1931-1970, 1972-2010, 2013-2018, 2020-2063, 2065-2069, 2071-2091, 2095-2098 and 2100-2105 as determined using the computer algorithm BLASTN.

6. An isolated polynucleotide comprising a sequence having at least 90% identical nucleotides to a sequence provided in SEQ ID NO: 1-38, 41-164, 166-167, 169-346, 348-353, 355-359, 362-372, 374-407, 409-415, 417-455, 457-468, 470-501, 503-525, 527-538, 540-579, 581-591, 1895-1902, 1904-1912, 1931-2010, 2013-2018, 2020-2063, 2065-2069, 2071-2091, 2093 and 2095-2106 as determined using the computer algorithm BLASTN.

7. An isolated polypeptide encoded by a polynucleotide according to any one of claims 1-6.

8. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 592, 594-850, 852-930, 932-951, 953-1046, 1048-1182, 1913-1930, 2107-2293 and 2296-2368.

9. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:

(a) sequences having at least 60% identical residues to a sequence of SEQ ID NO: 592, 597, 599, 602, 605, 607, 610, 612, 613, 616, 624, 626-628, 630-635, 637, 639-641, 644, 646, 648, 649, 652, 653, 655, 656, 658, 663, 665, 666, 668, 670, 673, 675, 676, 678-680, 683, 700, 702-705, 708, 709, 711, 713-715, 717-721, 726, 728, 730, 732, 735, 737, 739, 742-745, 747, 749, 750, 752-754, 757, 760, 761, 763-765, 768-776, 778, 780, 782, 783, 785-787, 790, 793-796, 798, 804, 807-811, 818, 820, 823, 825, 827, 829, 832-836, 838-844, 846-848, 850, 852, 854-857, 860, 866-868, 870, 875, 876, 878-881, 886, 887, 891, 894-899, 901, 903-907, 909-911, 913, 914, 916, 917, 920-922, 924, 927-929, 934-937, 939, 941, 943, 944, 946, 948-950,

953, 957, 958, 962, 963, 966, 967, 972-974, 978-908, 983, 984, 986, 988, 989, 991, 995, 997, 998, 1000, 1003-1008, 1010, 1013-1015, 1019, 1022, 1023, 1025-1027, 1030-1032, 1034-1036, 1038-1040, 1042, 1044-1046, 1048, 1050, 1051, 1054-1056, 1059-1065, 1067-1069, 1072, 1075-1077, 1080, 1081, 1087-1089, 1091, 1092, 1094-1097, 1100, 1102, 1103, 1107, 1113-1115, 1120-1122, 1124-1143, 1145, 1146, 1148, 1149, 1151-1154, 1156-1161, 1163-1171, 1173-1178, 1180, 1181, 1914, 1915, 1918, 1919, 1922, 1923, 1925, 1926, 1928-1930, 2279, 2294, 2298, 2318 or 2320;

(b) sequences having at least 75% identical residues to a sequence of SEQ ID NO: 592, 594, 595, 597, 599, 601, 602, 604, 605, 607, 609-613, 615, 616, 619, 624, 626-628, 630-641, 644-649, 651-653, 655-659, 661-663, 665-668, 670, 672-676, 678-681, 683, 686, 688-691, 696, 698-700, 702-705, 707-709, 711, 713-715, 717-722, 724, 726-730, 732-740, 742-755, 757, 758, 760-765, 767-778, 780-788, 790, 792-799, 802, 804, 805, 807-811, 814-821, 823, 825-827, 829, 831-844, 846-850, 852-857, 860, 862, 863, 865-871, 874-881, 883-887, 890-922, 924, 925, 927-930, 933-937, 939, 941-944, 946-950, 953, 954, 957, 958, 960, 962, 963, 966-970, 972-976, 978-980, 983, 984, 986-989, 991-998, 1000, 1002-1010, 1012-1023, 1025-1028, 1030-1036, 1038-1046, 1048-1056, 1059-1077, 1079-1081, 1083, 1084, 1087-1092, 1094-1098, 1100-1105, 1107, 1110, 1113-1115, 1117, 1120-1122, 1124-1154, 1156-1181, 1913-1920, 1922-1926, 1928-1930, 2279, 2280, 2283, 2287, 2289, 2294, 2295, 2298, 2304, 2306, 2307, 2318, 2320, 2330, 2335-2337, 2340 or 2341;

(c) sequences having at least 90% identical residues to a sequence of SEQ ID NO: 592, 594-616, 618-621, 623-683, 686-692, 696, 698-715, 717-755, 757, 758, 760-800, 802-850, 852-872, 874-930, 932-937, 939, 941-944, 946-950, 953-963, 966-998, 1000-1046, 1048-1085, 1087-1092, 1094-1105, 1107-1181, 1913-1920, 1922-1930, 2279-2280, 2283-2287, 2289-2292, 2296-2299, 2303-2309, 2311-2316, 2318, 2320, 2321, 2329-2346, 2348, 2349 or 2353; and

(d) sequences having at least 95% identical residues to a sequence of SEQ ID NO: 592, 594-616, 618-684, 686-693, 696-755, 757, 758, 760-850, 852-

930, 932-937, 939-944, 946-951, 953-963, 965-1046, 1048-1182, 1913-1920, 1922-1930, 2279-2281, 2283-2292, 2296-2309, 2311-2322, 2324, 2325, 2329-2346, 2348, 2349 or 2351-2368.

10. An isolated polynucleotide that encodes a polypeptide according to any one of claims 8 and 9.

11. A DNA construct comprising a polynucleotide according to any one of claims 1-6 and 10.

12. A transgenic cell comprising a DNA construct according to claim 11.

13. A DNA construct comprising, in the 5'-3' direction:
    (a) a gene promoter sequence,
    (b) an open reading frame coding for at least a functional portion of a polypeptide of any one of claims 7-9; and
    (c) a gene termination sequence.

14. The DNA construct of claim 13 wherein the open reading frame is in a sense orientation.

15. The DNA construct of claim 13 wherein the open reading frame is in an antisense orientation.

16. The DNA construct of claim 13 wherein the gene promoter sequence and gene termination sequences are functional in a plant host.

17. The DNA construct of claim 13 further comprising a marker for identification of transformed cells.

18. A DNA construct comprising, in the 5'-3' direction:
    (a) a gene promoter sequence,
    (b) an untranslated region of an isolated polynucleotide of any one of claims 1-6 and 10; and
    (c) a gene termination sequence.

19. The DNA construct of claim 18 wherein the untranslated region is in a sense orientation.

20. The DNA construct of claim 18 wherein the untranslated region is in an antisense orientation.

21. The DNA construct of claim 18 wherein the gene promoter sequence and gene termination sequences are functional in a plant host.

22. A transgenic plant cell comprising a DNA construct of any one of claims 13-21.

23. A plant comprising a transgenic plant cell according to claim 22, or fruit or seeds thereof.

24. The plant of claim 23 wherein the plant is a woody plant.

25. The plant of claim 24 wherein the plant is selected from the group consisting of eucalyptus, pine, acacia, poplar, sweetgum, teak and mahogany species

26. A method for modifying gene expression in a plant comprising stably incorporating into the genome of the plant a DNA construct according to any one of claims 13-21.

27. The method of claim 26, wherein the plant is a woody plant.

28. The method of claim 27, wherein the plant is selected from the group consisting of eucalyptus, pine, acacia, poplar, sweetgum, teak and mahogany species.

29. A method for producing a plant having modified gene expression comprising:

    (a) transforming a plant cell with a DNA construct according to any one of claims 13-21 to provide a transgenic cell; and

    (b) cultivating the transgenic cell under conditions conducive to regeneration and mature plant growth.

30. The method of claim 29 wherein the plant is a woody plant.

31. The method of claim 30 wherein the plant is selected from the group consisting of eucalyptus, pine, acacia, poplar, sweetgum, teak and mahogany species.

32. A method for modifying the activity of a polypeptide in a plant comprising stably incorporating into the genome of the plant a DNA construct according to any one of claims 13-21.

33. The method of claim 32 wherein the plant is a woody plant.

34. The method of claim 33 wherein the plant is selected from the group consisting of eucalyptus, pine, acacia, poplar, sweetgum, teak and mahogany species.

35. An isolated polypeptide comprising a DNA-binding domain, wherein the DNA-binding domain comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 2279-2293 and 2296-2368.

SEQUENCE LISTING

<110> Wood, Marion
Shenk, Michael A.
McGrath, Annette
Glenn, Matthew

<120> Compositions and methods for the
modification of plant gene transcription.

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<160> 2368

<170> FastSEQ for Windows Version 3.0

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<210> 30
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<210> 31
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<212> DNA
<213> Eucalyptus grandis

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      <213> Eucalyptus grandis

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<210> 36
<211> 238
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<212> DNA
<213> Eucalyptus grandis

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<211> 225
<212> DNA
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<212> DNA
<213> Eucalyptus grandis

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<212> DNA
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      <400> 43
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aagagtgaca catcatcggt ggtcctggtc ggaggtcaaa tatctctctg attgccatct      180
gatggcacta gatgctagcc tttagagttg tgtatcgga                             219

      <210> 44
      <211> 310
      <212> DNA
      <213> Eucalyptus grandis

      <400> 44
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gaccagtctg atgaggatgt tccggctgaa gaatgtgatg agtatccatg gacatcagag      180
aggactagga acaatcattt gccggaagaa gccggtttct caggatcatc ggcagacagt      240
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gcattagatt                                                             310

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      <211> 1043
      <212> DNA
      <213> Eucalyptus grandis

      <400> 45
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atcgcccctc ctcctctccc accgcatggc cttccacaac cacctctccc accaggacct      180
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gcagcagcac ctgccggact cctcctcctc cgtccaccac cagctccacc acgccgccgg      300
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      <210> 46
      <211> 391
      <212> DNA
      <213> Eucalyptus grandis

      <400> 46
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gacgtcgctg ttatcatctt tgaggatcgc ccagggcaca gccccaagct ctaccagtac      300
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aaccgtggcc ctggggactt ttcgggcgct g                                      391

      <210> 47
      <211> 821
      <212> DNA
      <213> Eucalyptus grandis

      <400> 47
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      <211> 648
      <212> DNA
      <213> Eucalyptus grandis

      <400> 48
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gcccggagag cggcccgcgg aggctcggct cctcctctga cgacaagaga gaccctcctc      240
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cggcacagct cagcaagtac gggaagattg aaggcaagaa cgtgttctat tggttccaga      420
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cgagaacccc caccacagcc gccaccatcg ccactgtaac tttgaacact actaaggtac      540
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      <210> 49
      <211> 559
      <212> DNA
      <213> Eucalyptus grandis

      <400> 49
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<210> 50
<211> 486
<212> DNA
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<400> 50
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accaac 486

<210> 51
<211> 726
<212> DNA
<213> Eucalyptus grandis

<400> 51
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<210> 52
<211> 395
<212> DNA
<213> Eucalyptus grandis

<400> 52
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gcgtcattgg aaaccctcag agatcacaca ttataaagtc atttagacat tttgttaacc 180
attcttgcat gagttcaatt acagagcatg tagaatcaca atgccttccc cctttttggg 240
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aagcgatcac ctaatgtcgc agcaagcacg acatccagtt cacctcaatc agccactaat 360
attgcccggg gatactgtcc atgagagcga attgc 395

<210> 53
<211> 1700
<212> DNA
<213> Eucalyptus grandis

<400> 53
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aaggaaagga tgagtaaaca agatgtcatg aagatgcaga cgtgtgttct cagagtgaac 180
atacactgtg aaggatgcaa gcagaaggtc agaaaactgc tgaagaagac cgagggagtg 240

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ggaggacaca agaacggcac ccaaaaccct cctccttcgc tcccacaaca accaccgcag     420
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<211> 944
<212> DNA
<213> Eucalyptus grandis

<400> 54
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tctcttctcg taataattct aatcctaaca tggtgtggta tgcgagacaa aaccagacca     180
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cactattctc tggtgagaga ccatcatgac ccatcagctt ctcaccacca ccaccaccaa     660
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caaaaggtcg gagcgccgcc tgaagtggtg gcgaagctgt cggtggcgcg acaggagttc     840
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<210> 55
<211> 915
<212> DNA
<213> Eucalyptus grandis

<400> 55
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<210> 56
<211> 498
<212> DNA
<213> Eucalyptus grandis

<400> 56
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tcagtactcc aatatcat 498

<210> 57
<211> 474
<212> DNA
<213> Eucalyptus grandis

<400> 57
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<210> 58
<211> 489
<212> DNA
<213> Eucalyptus grandis

<400> 58
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aaaaaaaaa 489

<210> 59
<211> 456
<212> DNA

<213> Eucalyptus grandis

<400> 59
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<210> 60
<211> 455
<212> DNA
<213> Eucalyptus grandis

<400> 60
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<210> 61
<211> 406
<212> DNA
<213> Eucalyptus grandis

<400> 61
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cggaaaagaa gcgccgcctc actcctgagc aggtgcatct gttgga 406

<210> 62
<211> 530
<212> DNA
<213> Eucalyptus grandis

<400> 62
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<212> DNA
<213> Eucalyptus grandis

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<212> DNA
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<212> DNA
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<211> 387
<212> DNA
<213> Eucalyptus grandis

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<210> 68
<211> 479
<212> DNA
<213> Eucalyptus grandis

<400> 68
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<210> 69
<211> 684
<212> DNA
<213> Eucalyptus grandis

<400> 69
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<210> 70
<211> 356
<212> DNA
<213> Eucalyptus grandis

<400> 70
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      <212> DNA
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      <210> 73
      <211> 646
      <212> DNA
      <213> Eucalyptus grandis

      <400> 73
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<212> DNA
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<210> 75
<211> 766
<212> DNA
<213> Eucalyptus grandis

<400> 75
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<210> 76
<211> 443
<212> DNA
<213> Eucalyptus grandis

<400> 76
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<210> 78
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<212> DNA
<213> Eucalyptus grandis

<400> 78
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<210> 81
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<400> 81

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<210> 86
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<212> DNA
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<210> 89
<211> 441
<212> DNA
<213> Eucalyptus grandis

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<212> DNA
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<210> 92
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<212> DNA
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<211> 379
<212> DNA
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<212> DNA
<213> Eucalyptus grandis

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      &lt;210&gt; 111
      &lt;211&gt; 380
      &lt;212&gt; DNA
      &lt;213&gt; Eucalyptus grandis

      &lt;400&gt; 111
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tggcctccag gacaaggccc ccaactccaa tgagaacagc accaagagct tcaaaccaaa      300
ggagatcacc tcgaggaacc acgacacccc tgccatctct actaattcgg cttcctccat      360
cgggggaaac gtccgcagca                                                  380

      &lt;210&gt; 112
      &lt;211&gt; 348
      &lt;212&gt; DNA
      &lt;213&gt; Eucalyptus grandis

      &lt;400&gt; 112
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acaaggctga accggaactg gtataagtca ccgaaagaat ttgcagagga tgtcagactt      180
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atgcggtttg cgttagacta cgacatgggt cttcctacac ctacctca                   348

      &lt;210&gt; 113
      &lt;211&gt; 350
      &lt;212&gt; DNA
      &lt;213&gt; Eucalyptus grandis

      &lt;400&gt; 113
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catggacggt ttttgagttg catgaatgct gtttggcatc ctgaatgttt ctgctgccgt      180
gcttgcaccc tgccaatttc tgattatgag ttttctttat caggcaatta tccttaccat      240
aaatcttgct acaaggaaca ctaccaccca aagtgtgatg tctgcagtca ctttatccct      300
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<210> 114
<211> 534
<212> DNA
<213> Eucalyptus grandis

<400> 114
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<210> 115
<211> 450
<212> DNA
<213> Eucalyptus grandis

<400> 115
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<210> 116
<211> 501
<212> DNA
<213> Eucalyptus grandis

<400> 116
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<210> 117
<211> 372
<212> DNA
<213> Eucalyptus grandis

<400> 117
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<210> 118
<211> 378
<212> DNA
<213> Eucalyptus grandis

<400> 118
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cacaagacca cttcttcgtc ctccgacggc acgcccctgc acgtttcctg cctctcgggc 180
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<210> 119
<211> 414
<212> DNA
<213> Eucalyptus grandis

<400> 119
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<210> 120
<211> 313
<212> DNA
<213> Eucalyptus grandis

<400> 120
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<210> 121
<211> 415
<212> DNA
<213> Eucalyptus grandis

<400> 121
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catgcaccta tcccctccca ccaccctcac catgtgcccc tcctgtgagc gcgtc 415

<210> 122
<211> 385
<212> DNA
<213> Eucalyptus grandis

<400> 122
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<210> 123
<211> 282
<212> DNA
<213> Eucalyptus grandis

<400> 123
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aatgcaagaa atatttttga tgactaaggt cattcttagg tc 282

<210> 124
<211> 383
<212> DNA
<213> Eucalyptus grandis

<400> 124
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gcggcgagtc gtcctcgctt gataagagga gcgatgtctt cttggttggt gcttgtaagg 180
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<210> 125
<211> 350
<212> DNA
<213> Eucalyptus grandis

<400> 125
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catggatggt cactacattg gtgatggtcc ctaccgtttg ggcccgtagg ctgtcaatcc 120
atgcaccata atcggatata taggtttgat gttcttgcag ggtcctctgg tggttgcttc 180
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ttatagagtg ttgggtaaag tccatggcaa cccaatgcaa gaaatatttt tgatgactaa 300
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<210> 126
<211> 539
<212> DNA
<213> Eucalyptus grandis

<400> 126
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tcgaggctag agcctcggaa gaagctgcag ctcgctaggg aattggggct gcagccccgc 180
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<210> 127
<211> 493
<212> DNA
<213> Eucalyptus grandis

<400> 127
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ggggatacgc tat 493

<210> 128
<211> 627
<212> DNA
<213> Eucalyptus grandis

<400> 128
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gggagagaga gagagagtac gtactgt 627

<210> 129
<211> 385
<212> DNA
<213> Eucalyptus grandis

<400> 129
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aaaggggagg ccttctggtg gaactcttgt tgtatgccct actagtgtgc ttaggcagtg 120
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<210> 130
<211> 345
<212> DNA
<213> Eucalyptus grandis

<400> 130
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<210> 131
<211> 766
<212> DNA
<213> Eucalyptus grandis

<400> 131
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<210> 132
<211> 162
<212> DNA
<213> Eucalyptus grandis

<400> 132
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catcctgcac agtatagaac aagactgtgc aaggatgaga ctggatgtgc tcgcaaagtt 120
tgtttctttg ctcacaagcc cgaagaatta aggcctgtct at 162

<210> 133
<211> 518
<212> DNA
<213> Eucalyptus grandis

<400> 133
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cacgaactat tggcaatcga tctcatggct tcctcgagcg gaacgtcttc cgggtcaacc 180
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gatgccggag atggtggcag accaggaaat ggtggcgg 518

<210> 134
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<212> DNA
<213> Eucalyptus grandis

<400> 134
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<210> 135
<211> 278
<212> DNA
<213> Eucalyptus grandis

<400> 135
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tatgttgtcc aaccttctcc aaaagagtgg cagagtac 278

<210> 136
<211> 237
<212> DNA
<213> Eucalyptus grandis

<400> 136
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<210> 137
<211> 371
<212> DNA
<213> Eucalyptus grandis

<400> 137
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<210> 138
<211> 947
<212> DNA
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<400> 138
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aattgcagat gcagtgttgg ggtgatcgag agtgaaacta gtgttgggta tgacttcttg 840
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<210> 139
<211> 509
<212> DNA
<213> Eucalyptus grandis

<400> 139
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tccccacccc gacagaaata aaaaagaaca gaaaaaaaaa cgtccagatc ccatttggga 180
gctcctcggt cgcgaccctt ttggtgattc ctcgtgcgcc cacgaagggt cctcgggtcg 240
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ttgggaggac gggaaaaatt caagaatgtc cgttctgtca aaaagcgatt ctgttgagat 360
tagggaggtt tgggaataca atctggaaga cgagttttcg ttcattcgcg aaatcgtgga 420
tgattatccc tacattgcca tggacaccga gttccctggg atggtccttc gaccggtggg 480
gaatttcaag agcagctccg agtctcatt 509

<210> 140
<211> 426
<212> DNA
<213> Eucalyptus grandis

<400> 140
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aaagcaccct gaagaggatt ggggtgaatg ccatccccgc aattgaagaa gtcaacattt 120
ttaaggatga tgtagttatc cagtttttga atcccaaagt tcaagcgtct attgctgcaa 180
atacctgggt agttagtggt tctcctcaga ccaagaagct acaggatatc ctccctggca 240
tcatcaacca attaggtcct gataacttgg acaacctggg tagttagtgg ttctcctcag 300
accaagaagc tacaggatat cctccctggc atcatcaacc aattaggtcc tgataacttg 360
gacaacctga ggaagttggc agagcaattc cagaagcagg tgcctggtgc agccactggt 420
tctggt 426

<210> 141
<211> 310
<212> DNA
<213> Eucalyptus grandis

<400> 141
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gaggtgattt ccagattcaa tggtccgagt tcgccggacg cggcggcgct gccggtagca 120
tctaaaagca ttgacctgga aagaaatagg aggaagaagc tcaatgaaag gctcttcgca 180
ctcagagccc ttgtacccaa gataagcaag atggataagg cttcgatagt gaaagatgct 240
attgattaca tccaagactt gcgtgaacaa gaaggaagat ccgagccgag atcgcagagc 300
tcgaatctgt 310

<210> 142
<211> 622
<212> DNA
<213> Eucalyptus grandis

<400> 142
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gccggaagga tcatcctgca gcaaggttaa tggtggctct tcaagaattg aacttggagt 120
tgcagcatgc tagtgtttct gtggtgaacg agctcatgat ccagcaagcc acagttaaga 180
tggggagtca gttgtacact caggagcagc tcaaggcagc tctattggcc gtaatctgag 240
gatctttgaa ggatttcgtt caatgcaagt tggcatcgac tagacaatgg aattgaagtt 300
tctccattga aagcaagaac ctgcccaata ttttcaggtt ccgggtggtg cgaactcttt 360
gaacaatggg ctttgtttag ttgtgtggct tcgtctggta gattgaaccc ctagattgca 420
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ctgtcttcga tgtaaataga tgctccaaat ttgaaactga tggggccgtt tccttatcct 540

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catcctgtaa tcaatgcgca ag 622

<210> 143
<211> 369
<212> DNA
<213> Eucalyptus grandis

<400> 143
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atctatctca agtgccattt tagacgattt ttgcacaata aaggatggac cttttccgaa 120
tctttcagat tgtttggtgg gcaacttcag ttcaagccaa gatgttcagt ctcagattac 180
ttctgcaagt cttgcagatt ctcaggcttt ctcaagacaa gacttccctg ataattcagg 240
cggtacatct tcgagcaatg ttgattttga tgagagtagc attttgaaaa acagcacatg 300
gcaacagcaa gtagccccac ctatgcgcac ctatactaag gttcaaaagg caggatcagt 360
cggaaggtc 369

<210> 144
<211> 768
<212> DNA
<213> Eucalyptus grandis

<400> 144
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tgtgactggc taacatgtaa agcaggagat tgaaggcagc tccagcccag gctgtttcat 120
aaagtatacc agaagttctt gtcgtttcct ggtacagggg atagatccta gcaattctcg 180
gtacatattg gccataaatg acgaacttca gtgactcctt cgacattaaa ggaacctggt 240
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gatagtggaa ctgggtggcc atcttactat cagcccatag ggaacaatgt caaatcaaaa 660
ttggatctct cgatcatttt catgccacgc caggaagtcc tgtgtgctgc ttgcgacgcg 720
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<210> 145
<211> 546
<212> DNA
<213> Eucalyptus grandis

<400> 145
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ggacaagtgc ggggagggct tgctggtggc ggtggaggca cagaaggcgg tgccggcgcc 120
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ccacccgcac tccgcctccc cgcttagcgg ccccactccg gccttcttcc ctttcccaag 480
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gccgcc 546

<210> 146
<211> 640
<212> DNA
<213> Eucalyptus grandis

<400> 146
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<210> 147
<211> 236
<212> DNA
<213> Eucalyptus grandis

<400> 147
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ataatgtctg aggaacatgg gtacaataga agcggcaaga agtgcagaga gaagtttgaa 180
aacctgtaca agtactacaa gacaactaag gaaggcaaag ctggaaggca ggatgg 236

<210> 148
<211> 520
<212> DNA
<213> Eucalyptus grandis

<400> 148
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cgatctcgga ggggaaatcc aacttgcccg aaatagcaat cgcagcttgc agaatgggtc 120
ctcaaatgaa cttccgaaac ttggccgatg tgccagcagc cgaaagaagc accggagggc 180
aaccaggaat tcccctatta tctcgacaat cctcagtata ttccttgact ttcaatgagt 240
ttcagaacac atggagtgga ctttctaagg atattggatc catcaacatg gatgagttcc 300
tgaagaacat atggacagct gaggagagcc aactacagct acaagacatg gcgccttctg 360
gtaatggagg ggaaggaggt ggtcaagtag ggaatttgct gagacagggg tcattgactc 420
tgtcgcggac tattagtcaa aaaacagttg atgaagtgtg gagagaatta ttcaaagaga 480
cggaggatgt gaaagaaggg agtagagaag gaggtgacat 520

<210> 149
<211> 148
<212> DNA
<213> Eucalyptus grandis

<400> 149
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tcgtccggcc tactgtgcaa cgacgcggtc atctgggtca ccttccacag cgcctacgac 120
ttcgggtacc tggtcaagat cctgaccc 148

<210> 150
<211> 443
<212> DNA
<213> Eucalyptus grandis

<400> 150
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aacactagcc ccacctcact cattatccgc ttcgctccta ctcaactgct atcgcgctat 120
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gggtgcgtct gcgcgactcg ggcaagtggg tctgcgaggt tcgcgagccc aaaaagaagt 300
cgaggatctg gctcggcacc ttccctactg tggagatggc agcgagggcg catgacgtgg 360
cagcgctcgc gctgagaggc cagtctgcct gcctcaactt cgcagactct gcgtggcggc 420

tgcccaagcc ggcatcgacg gat 443

<210> 151
<211> 341
<212> DNA
<213> Eucalyptus grandis

<400> 151
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tctgccgtat ctgaactaaa ggctccgtca cagggtactg ctaaggtcac tactaaccag 180
tttccagata tgggtatgct cgcaggagca caggagtctg aagcagtctc cgttaatcag 240
gcagataccg ttatgactgg gatctctcaa acacaagaca tggtgctgga ggatattgct 300
aatatatcca gagatgacta catgggagca gatctgcata a 341

<210> 152
<211> 603
<212> DNA
<213> Eucalyptus grandis

<400> 152
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ctcttctaga cggcgtagtg gaatttggca ccacggaaag ggttcaagag gacatttcac 180
tcgtcaatca tgtcaaaacc ttcttcgttg accaccaccc ccctcaccca ccgaaacccg 240
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acaacgccga gcccagtgag ttcgagatgt ctgaggacat ccggctcggc tcgccagacg 540
acgggtcaaa caacctggac tcggacttcc ccatgctgac cataaactcg acggccgcgg 600
atc 603

<210> 153
<211> 984
<212> DNA
<213> Eucalyptus grandis

<400> 153
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atttgagact cgaggacgag ggccagcaga ggatgaggaa acgggtgctg gacaagttgc 120
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aagcttcatg caaggaagag cagg 984

<210> 154
<211> 1144
<212> DNA
<213> Eucalyptus grandis

<400> 154
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gctc 1144

<210> 155
<211> 238
<212> DNA
<213> Eucalyptus grandis

<400> 155
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cggcgagcag agcccgcagt tcgggcggcg tgagggagca ggataggtac ctgccgatcg 120
cgaacatcag ccgcatcatg aagaaggcgc tgccggccaa tgggaagatc gccaaggacg 180
ccaaggacac tgtccaggag tgcgtctccg agtttatcag cttcataacc agcgaggc 238

<210> 156
<211> 950
<212> DNA
<213> Eucalyptus grandis

<400> 156
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ctcctccgcc gcctccgccg tcgccatccg ccaggtctgg gcctggaacc tcgacgccga 120
gttcggcctc atccgcgacc tcatcgaccg ctaccccttc gtctccatgg acaccgagtt 180
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<210> 157
<211> 272
<212> DNA
<213> Eucalyptus grandis

<400> 157
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<210> 158
<211> 863
<212> DNA
<213> Eucalyptus grandis

<400> 158
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cgatcccagc tcctgcagcc tcgactttgc tgaagcgtcg tcctcctcgt cgccgctgtc 180
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aaaatatttt tgaatggagt gcg 863

<210> 159
<211> 936
<212> DNA
<213> Eucalyptus grandis

<400> 159
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<210> 160
<211> 281
<212> DNA
<213> Eucalyptus grandis

<400> 160
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<210> 161
<211> 291
<212> DNA
<213> Eucalyptus grandis

<400> 161
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gagctcgaag ccctccacaa caccgccgcc ggggccaccg tcggaatatc aagcagcttc 180
aagtggtggt ggtgctgctt ctggcactgc agccctgggc ggtctctcgg tacccccagt 240
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<210> 162
<211> 743
<212> DNA
<213> Eucalyptus grandis

<400> 162
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cctgagctat tctgcggcgg cggcggccac cggaacccga cgcagcactt ggagtcgatg 180
atgatgggtg gcggcgggct tcacaacggc caacgccaag gccacagcca caaccatcaa 240
caccaccacc agtttggccg tgatcattct tctccctctt cggtcgccat ggctggtgcg 300
gcaggggggtt tagagagtga gaacggcgga aatgggagat ggcctaggca ggagactctc 360
acgctcctcg agatcaggtc gaggctcgac tctaggttta aggaggccaa ccaaaagggt 420
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aagaaatgca gggaaaaatt cgagaacttg tacaagtatt acaagaagac gaaggaagga 540
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ggagagaacg ccaattcgaa ttccatcctc caagctccat ctcttccaca ctcactccac 660
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catcaactgc agagaccgtg cga 743

<210> 163
<211> 394
<212> DNA
<213> Eucalyptus grandis

<400> 163
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tgaggaggga agactgcgaa cgaaccaagc acgactccgc gttcgccact tggaaggtgc 180
tcgtaggacc tactgattgg gaagattatt cattggggaa ggaaggtgct gccaggtacc 240
gggttcataa cctcccgaaa agcccggggc cggggatata tgagctcggc gtagccgctt 300
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accttgggaa ggcggactgt gtcaggacca gact 394

<210> 164
<211> 1017
<212> DNA
<213> Eucalyptus grandis

<400> 164
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tccctcagct cctcttcacc actggttttt gagatgatct gtgtgctcgg cgccgttgat 180
tattatgtct tattctgact tgctgaacct gctgtttgcc gtgggcgttt ggtgcaccgc 240
gtatattgcg gctgccgttc tcgagtcgct ccgggtcttc catactctct gttcgttttg 300

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gacaatacac attgttaacc tagatcctgc agcagagaac tttgactatc ctgtggccat     480
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caatgtctgt ggggtatact tgcttgattc acagttcatc acagatgtga ccaaatttat     780
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cctgtcaaaa atggaccttg tgaaaaacaa gagagatatt gatgattact tgaatccgga     900
acctcgagtg ttgttgtcag agttgaacca aacaatggct cctaagtttg agaagctcaa     960
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<210> 165
<211> 376
<212> DNA
<213> Eucalyptus grandis

<400> 165
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ggacattttc tgacggtgat cccgcatttt gcctggcgac tggtgaatcc ggcaacgctg     120
aaatattttg atgcaccgca caggccgatg tatatgcagg aatatcttta ttcaatcaga     180
aatcatcgtt ataccgccac gatgcttcag catattgctg aagatcgtga cgggacgagt     240
cattaaccca gcatcgagcc ggttgcaatt aaattacggt gtaagtcgaa gacgtggcta     300
agatcgtggt gaatatgtcc gccaggcgca ttttccagat agcgatgcag ataatcccga     360
tacataggat gtgcac                                                    376

<210> 166
<211> 689
<212> DNA
<213> Eucalyptus grandis

<400> 166
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gtcactggtc aatggtcatg cgctgaagct ttctaccttt aatgcaagca tcgatcgtct     120
cggcgacgtg ctctgcttcc tcttcactgc tggtcagttc atatgcatcc acgcgtagtt     180
gtcttcaagc gacgcatgca ctgattgaag cgtcctcata ggcttgtgag atgatccaag     240
acctttcact gcttgtgata ctctttataa aggacgaggg atggtcttga tgaatcagcc     300
catctagaga ggcttccacc atatcacagt ttggacttgt gccaatgcca aaaggttcaa     360
gcataaagat gggagttcca ctgcaacatt ctagtggtat caaacaattg aatgttcatt     420
ttcaagagcg ggacttgtgt tctactcaat caaccagtca atcattcagt gaagtgccta     480
atataggagg aagtactgac tgtagccaag ccacagtttt agaacagaca gaacatggtg     540
aaactgaagg gcaatcagtg agaggacaag caaaatcagc cttgtcaatg ggaactcagg     600
atttagtctt ccaaccttta gaggtgtgca tcccactcca ctatgctgaa ccatccttgg     660
gtggttttat gcccgctgct tatgggcca                                       689

<210> 167
<211> 1566
<212> DNA
<213> Eucalyptus grandis

<400> 167
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tctctctctc tctgggtgac ccttcttccc ttttctctgc gcttccgtcg aagtgaaaga     180
gggcgccgag gttgtcgtcc gagatgcgtc ggagaaggac ctctctcctg atttcatgag     240
accgaccacc acactatgaa agatctaagt ttgaggcaat gggaagtggt gtctacacct     300
ggcaatgaag gaaagacagc gttggagagc tgaagaggac gccttgttac gtgcatatgt     360
gaaacagtat ggcccaaggg agtggcacct tgtgtctcag cgcatgaaca ctccccttaa     420
ccgtgatgcc aagtcctgct tagagaggtg gaagaactac ctgaaaccag gtataaagaa     480
gggatccctc agtgaggaag aacagcgtct tgtcatccag cttcaggcga aacacggcaa     540
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aattgacgag gggaaatacg atcatatatt agaaaacttc gccgagaagc tagtgaagga     720
gcgatcgacc ccagcacttc tcatggccac agcaaatggt ggcttcattc acaccgattc     780
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tctgaggcct ccttcaccgt cagtaaccct tagtctctcc cctgcaacag ttccagcatc     900
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gttaatcgag caaatcgggt ttagaccccg gattgcagat catgacaggc agtgagagtt    1380
accgtgagtc gtagtccttt atatacacgt ctctttcttg tgccaatcat gtcattcaag    1440
tctgcttatt agaattccaa gactcccttt tcctacccaa caaacaccta cctttacgta    1500
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ggaaat                                                               1566

      <210> 168
      <211> 381
      <212> DNA
      <213> Eucalyptus grandis

      <400> 168
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gtctaaccaa gatcagggca agaaagaacc atttaattag ggagcatatt gagcggctaa     120
aagcagagga gcggaaacta ctggaagaaa agagaaagct acttcaagag attgaatgcg     180
gcaaaggatt gaccccggtc tccagcgaac cgcctcgtga agaaatccgc gcggagtcta     240
tggatgttga gaccgagttg tttatagggc caccgaaaag atgaaccgct cagttgcccg     300
ttctgcgatt gctcaaaata atgaccatag caacggaaac gcttcttctg ctgctctttt     360
cttcttcaat cgtgaggcaa g                                               381

      <210> 169
      <211> 331
      <212> DNA
      <213> Eucalyptus grandis

      <400> 169
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gtttatggat gaagacgagc tcttgaacat gccgaaactg ctggacgaca tggcggaagg     120
aatgctggtg agcccaccga ggactcagat ggcctcagag aacgactcgc cggaggactc     180
agatggtgga gagagcctgt ggagttatcc ctaattttag aaggtgagat gatcagggct     240
tatcaattac agtagtcctc attgtagaca tatacgaata cgatatccat tgtatatgat     300
caggatttcg tcatgatggt tgatcgcatc c                                    331

      <210> 170
      <211> 950
      <212> DNA
      <213> Eucalyptus grandis

      <400> 170
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ccttggtgcg tgatgtgtgg aggcgccatc atttccgact tcgtcgagga gcggctcgac     120
cgccgccgcc ccgggagctg ccgcccccgag aggaagctga cccctcacga gctctggtcc     180
gagctcgacc ccgcctccga cctcctcagc ctcgacggcc ccgtggccca aggccacccc     240
aaccctttct ctctcgtcgc aaaccaactc aaccaagtga tgaagagtga agagaagaac     300
agtgaggagg cgggtcacgg acacgtgtcg gagacccaga agagccagag caatggccgg     360
agccagaggg ctcgcaagaa cgtgtacaga gggatccggc agaggccgtg ggcaagtgg      420
gccgccgaga tcagggaccc ccacaagggc gtccgcgtct ggctcggcac cttcaagacc     480
gccgaggagg cggcgcgggc ctacgacgaa gccgccaagc gcatccgcgg cgacaaggcc     540
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gccagcttgg aatctttcct ggagctggag ccaaccgagg agccgctcga gccgggcacc 720
gggccgtccc cggctgatct ctggatgctc gaagacctcg tcactcatca ccagcaccgt 780
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ttgtgctttc gagtgccatt aatacagtac caagtatcgt aaaaaaaaaa 950

<210> 171
<211> 376
<212> DNA
<213> Eucalyptus grandis

<400> 171
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gattcgcttg ccgaggaacc gaacccgact ctggctcgga accttcgaca cagccgagga 240
tgcagccctg gcctatgacc gcgaggcgtt caagctacga ggggagaatg ccaggctcaa 300
tttccccgag cttttcctca acaaggacaa ggctgaggaa tccgctggtc caagctcgtc 360
atcttcgtca cccccc 376

<210> 172
<211> 427
<212> DNA
<213> Eucalyptus grandis

<400> 172
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attcttcatg catcatgatc caagatatgt cacagggttt taggaagatt gatactgatc 120
gatgggagtt tgcaaaccga ggttttcagg aagggaagaa gcacttgctg aagaacataa 180
ggaggagacg caaactcagc gatcatagga caacatcgag tagtaccgtt gcttcggatt 240
acccagaggc tggaaaggaa gctgaacttg aaatgcttaa gagggaccag gaagcgttga 300
aggccgagat cctgaaacta agagaagagc gggagaactc gcagcatgag atcaaccagg 360
tcatcgagcg gtttcgctat gccgagtgca ggtgtcggcg gatgttcctc ttcctctcca 420
aagcagc 427

<210> 173
<211> 607
<212> DNA
<213> Eucalyptus grandis

<400> 173
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cgagaagagc tcgcttcagt tggagcttca aagatatcag ggagataatc aggatgttga 180
tttccagata cagttactac gtaagcaatt ccaaaatatg gaacaaaaac agacgcactt 240
gatcaccgtc ttagctcaat taatgcagaa gccagtattt gcttctcttt ttacgcagca 300
gtcggatagc cctaccaaaa agagaaggtt ggcggaactg gatcatttac atgactcaga 360
tgacaagagt gggctagaga gtttgaaatt ccagaaagaa aaattcaatg gtgttccctt 420
ttctctacta gatttggact ccgttgagaa actggagcag tctttgcact ttttagaaaa 480
tctccttcaa ggagtcgata acacttcagg cgcagaacag cacgacttcg gagcaatatc 540
gttgccttgg ccggcgggtt tcaccgagag aaaggaatct ttggatgatt ctgacaggca 600
tatccac 607

<210> 174
<211> 719
<212> DNA
<213> Eucalyptus grandis

<400> 174

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tagaatctgg cgttatgcag ccaaaatcta aaatttcaaa cggggtagat gctcatccac 240
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aagatccata ttatgggggg ttgatggcac aatatgggca tcagtcaatg gcttatcctt 660
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<210> 175
<211> 570
<212> DNA
<213> Eucalyptus grandis

<400> 175
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tcagtggcag atgttggggc tggaggtgaa gatgctgttg ttacatttga gggaattgcc 180
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acgaaaccag gaaaattccg tagttctcaa 570

<210> 176
<211> 754
<212> DNA
<213> Eucalyptus grandis

<400> 176
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gcagctctaa tggatatgct ggagcaaatg gtgtcggtta tgggcgaccc aattcagcgt 120
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gcagtgaact gtccttacat attgcatcac atacccgatg agagtgtgag cactcagaat 660
caccgagacc gggtgttgag actgatcaag agtttgtcgc cgagagtggt gaccctcgtg 720
gagcaagaat ccaacaccaa cacatcctca ttct 754

<210> 177
<211> 525
<212> DNA
<213> Eucalyptus grandis

<400> 177
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gaagcttctg agaaggaagc ttcaaagaag gaaccaaaca aaccacccaa tagttggttt 180
gatttgaagg ttaacacaca tgtgtatgta actgggttgc ctgaggatgt cactatggag 240
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cctcgtgtga agatctatgt tgacaaagaa actggaagaa aaaagggaga tgcacttgtc 360
acttatttaa aggagccctc agttgcccta gctatccaaa tattggatgg agcacctttt 420
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aaatttattt ctaaacaagt ggacggcaag aagaaaagaa actga 525

<210> 178
<211> 978
<212> DNA
<213> Eucalyptus grandis

<400> 178
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gatgttccac ccatggcttc ttaatctgat ccagatgaac catggagaaa caaaatcgaa 180
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tccaaaagca ggtcttcaga tcatcaaagg ggcagcattg cagagcaaga cgaagattca 900
aataacgtgg caacagacct tgaacttaag atgcctggaa catcatcaca tcaggacttg 960
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<210> 179
<211> 566
<212> DNA
<213> Eucalyptus grandis

<400> 179
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aatgtatcaa agatggataa ggcttcactg ctccaagatg cggagtctta tatcagggag 240
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atgatccagc aagccacagt taagat 566

<210> 180
<211> 521
<212> DNA
<213> Eucalyptus grandis

<400> 180
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atccgacgga cgacgccgtg cctcactctc cgtactcccc ttacacgctc aatgctggct 180
acggcggcgg ctgcgactcc tctccctccg ccgccggccc cggccacttc caggacgtca 240
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tgacgtcctc ccgcgaggcg gacttcccca tggacgtcta ctcctgcgac aacttccgca 360
tgtacgagtt caaggtgagg cggtgcgcgc gggggcggtc gcacgactgg acggagtgcc 420
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<210> 181
<211> 449
<212> DNA
<213> Eucalyptus grandis

<400> 181
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gcgggggcgg gaggtcgcac gagtgctcca tatgccacaa gtccttcccc accggccagg 120
ccctgggcgg gcacaagcgt tgccactacg atggcggcgc cagcggctcc gccaacagcg 180
gggtcaccac gtccgagggc gtggggtccg cggccccgcc cgcgctcgga tacgacagcg 240
gccgccgcaa cttcgacctg aacgtgcccg cgctgccgga gttcccgacc gggttcatcg 300
tgtcgggcga cgacgaggtg gagagccccc acccctcgaa gaagccgcgc ttctcgacgc 360
ccctgaagat caagctctct ccagaacagt gaaatctttg cctgtgcttt taggattagc 420
gcttgttaat tgatttagct agggctttt 449

<210> 182
<211> 610
<212> DNA
<213> Eucalyptus grandis

<400> 182
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acctcggaag gcggaggagg aatcccccca cgcgatttcg catccgccgc cgccgccgcc 120
ggccgccgct ttccgttctt attgcaattc tcaagataga tccatggcat tcgagcagta 180
ctttgcccag gagtggaggc ccatccctgg accagctatg gattctggaa gtagcgatgg 240
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actaggaaca attgtacccc cgagaccagc ggcttgtggc atccaagctc tcgcctctac 540
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cgccaattcg 610

<210> 183
<211> 767
<212> DNA
<213> Eucalyptus grandis

<400> 183
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tactacagac ttccagagat ggtgaagaga gacagagagg acacggaggt cgaagccctg 120
gccagggcca attgcttgat gctcctctcc cgagttggcg agagcaccga ctcggcgtcg 180
ccggaccgca aatcgcggcc taccgagcga atgttcgcgt gcaagacttg caaccgcgag 240
ttctcctcgt tccaggcgct cggagggcac aaagccagcc acaagaagcc gaagctgatc 300
tccggcgacc tcttccacct cggccacgca gcagattcct cgccggccaa gccgaagacg 360
cacgagtgct cgatatgcgg cctcgatttc ccgatgggcc aagccctcgg cggtcacatg 420
aggaggcaca gggcggccat gctggaaagc ttggcagcag cagccgcaaa gcctgtgcca 480
gtgttgaaga aatcaaacag caagagagtc acgggcttgg atttgaactc gttgccgatg 540
gaggacgact tgaccttgcg cttaggaaag gttgcgccgc cattggtgct agatctcgtt 600
ttgtaggagc ttagagagcg tagattgtgt acaaagcagt ttttagtcgg tgcctggcca 660
tttctttttc tttttttttc cttctttttt gaattcattg attgatattt tgaatcagag 720
actgggtttc gcatggatat taatttgttt ccaaaaaaaa aaaaaaa 767

<210> 184
<211> 469
<212> DNA
<213> Eucalyptus grandis

<400> 184
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gggccgagag gttggggaat tgcgggtgcg atagggcccg gcaggcgcag atcttcgggt      180
tgcagaccat cgcgtgcgtc cctgttttga acggtgtggt cgaactgggt tccaccgagc      240
cgatctacca gagctccgat ctgattagcg gaattagggg gctgttcaat ttccatgaat      300
cggagatggg atgcggtggt agggttttga atagcgagca tgacccggcg tcgctttgga      360
tctgcgatcc gccagtcacg atggagatta acgatcgtcc tatgacattt cagatagaga      420
accccagctc gagcagtctt accgaaagcc ccagcgcgat ctgcgcgat                  469
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<210> 185
<211> 533
<212> DNA
<213> Eucalyptus grandis

<400> 185

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cgatcttggg tcctattccc atggtatcgg gggatggtgg tgggaggacc ggttctgagc      120
ggtcaagaaa cgctgattgt gctccggcag gttttcctgg aggtgatgaa gatgtgaata      180
agggagggga cattccttat ggaatgtcaa ccatcgtgag agtcattccc aattctaggt      240
acttgagggt ggcgcagcaa ctgcttgatg aaatagtgaa tgtgcgaaag gctttgaagc      300
gccctgatga cgcgaatgac caatctagac atgagaacca aaggagcccc aaagatgcgg      360
atgggggttc caagaacgaa gcatcctcaa atccccaaga atccgccagt aactctagcg      420
agctttctgc tgctgaaaaa caagatttgc agaacaagct cacgaagctc ttgtccatgt      480
tggacgaggt tgataaaagg tacaagcagt actatcacca aatgcagatc gtg             533
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<210> 186
<211> 413
<212> DNA
<213> Eucalyptus grandis

<400> 186

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ggaggaacct ccccaagaaa gcaggtccct agcgtttgcc agtgtgtttt tccttttgtt      120
ttctgccttt gaatgagctt gtggagatag cgggagagat cgagactcgt ccgggcggtt      180
cgattctcga gagataatcg tcgtcgttcg ctagggaaac gaggtttcgt ctgactacgg      240
atggaaattc ctttttgcag ggttgcagag atgtggcaag agttgcaggc tgcgatggtt      300
gaactacctg aggcctgaca tcaaaagagg caacatatct cccgatgagg aagagctcat      360
catcaggctt cacaagcttt tggggaacag gtgaaacttc ttctgttctg acc             413
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<210> 187
<211> 574
<212> DNA
<213> Eucalyptus grandis

<400> 187

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ccgaacccgg attctctctc gctgcttcaa tccgcgcgaa ccccaaatgc acctccggag      120
catcccgttc cctccacttc caggagggat gaagttgctg tgttgaaaag tcagaaggca      180
ggccgtgaga aattgaggag ggatcgactg aacgagcact ttatcgagtt gggaaatacg      240
ctagatcctg ataggccaaa aaatgacaaa gcgacaattt tatcagatac tgtacaactg      300
ctgaaggatt taactgctca ggtgaaccaa ctcaaagctg aatatagtac gttctgtgaa      360
gaatctcgtg agttgacaca ggagaaaaat gatctcaaag aagaaaaggc ctctctaaaa      420
tctgacatcg agagccttaa tgctcagtat cagcagagag ctagagccat gtttccatgg      480
cccattatgg atcactcagt ggttatggcc ccaccttcat acccatatcc agtgcccgta      540
gctgtgcctt ctggtcccat tcctgttcat ccac                                  574
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<210> 188
<211> 988
<212> DNA
<213> Eucalyptus grandis

<400> 188

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aagcttatga agatggcggg ttcagtccgc actggtggaa agggtaccat gagaagaaag 180
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agaattgggg ttaatgctat tcctgcaatt gaggaagtca acattttcaa ggatgatgtt 300
gtcatccaat ttgtaaatcc caaagttcaa gcctctattg cagccaatac atgggttgtc 360
agtggtgctc ctcagaccaa gaaattgcaa gatatcctcc caggaataat caaccaatta 420
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ggtgctgctg ccacagcagg cgcaactgca atgcaggagg atgatgatga tgaggtccct 540
gaacttgttc cgggggagac tttcgaggct gctgcggagg agggtcacaa atcttagaga 600
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cgccgagagc atcaccgccg ctgagacc 988

<210> 189
<211> 536
<212> DNA
<213> Eucalyptus grandis

<400> 189
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gccctacaga ccttctacta caatggggga acccatcttt ctccccggcc ggacgagtct 120
cgtcggctcg atcagtgtca acgtagttgg aatccaacac aatgccggca ccttcagagc 180
gggcgagaca gtggcacttg tccgcgagcc gtccaacact gatgatgaga tggccatcca 240
agtcctcaac acgaggggca tggtggtcgg ctacatcaag cgcgaagctg ccaaagtctt 300
ggccccacta atagactctc agctgatctc cgtctacgcc attgtgccca aagttcctag 360
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cgagcacgtg aagtcaacga tcttggaagg caagttgatg ctcaccccgc cggtggggaa 480
ggaggtgaga ggcgtgaacg agagtttcac gttggtcggc cagggtgtcg agaaga 536

<210> 190
<211> 2444
<212> DNA
<213> Eucalyptus grandis

<400> 190
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gatctgatgc tctgatttct ccagtgtaac gggaacccag caaatccagc aacctcgtgc 180
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tgtggttttt tcgtggaaga tctatatcag aaaatgatga tgttcgagga tatgggaatc 300
tgtggcgatc tggacttctt ctctgcccct ctcggggagg gacatggggt tgctccgcaa 360
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ctcgagagaa ggatgtggag ggacaagatg cgtctcaagc ggctaaagga gcagaacaag 480
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<210> 191
<211> 473
<212> DNA
<213> Eucalyptus grandis

<400> 191
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agaattccgg agatggtgaa gagagacaga gaggacacgg aggtcgaagc cctggccctg 120
gccaactgct tgatgctcct ctcccgagtc ggcaagagca ccgactcgcc atggctgaac 180
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ctcttccacc tagggcgctc cgcggattcc tcaccggcca agccgaagac gcacgagtgc 360
gcgatatgcg gcctcgagtt cccgcttggc caagcccttg gcggtcacat gaggaggcac 420
agggccgcca tggcggagag cttggcgacg gccgaaaagc ctgtgccggt gtt 473

<210> 192
<211> 468
<212> DNA
<213> Eucalyptus grandis

<400> 192
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gctatcttaa tgaagagatt ggtggtccga aggatgcact tgatgatgga actcagccta 120
ataacaagag gaagcgcggt agagcaccaa agagggctat gaaggctgaa agggaaaagt 180
taaagcgtga tcatctgaat gagcttttcg acaaactggg tagtcttctt gaattgagtg 240
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tttctcagat tcaaagtcta agaaaggaga acacgacttt gttgtccgaa tctcattatg 360
ttgcagcaga aactaatgag ctgaaagacg agaattttgc actcgaagct caaatcaaga 420
atgtacaaag ggaattagaa gacaagttag gccattctaa gcccgacc 468

<210> 193
<211> 968
<212> DNA
<213> Eucalyptus grandis

<400> 193
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gatctacatg gcaatgaatg gcatttccga catatttttc gagggcaacc tagacgccac 120
ctactcacta ctggatggag tgtctttgtg agctccaaga agttgatagc tggtgatgcc 180
tttatatttt tgaggggtga agatggagaa ttgcgcgtcg gtgttaggag attaatgaga 240

cagcaaagta acatgccatc ctctgttata tctagtcaca gcatgcatct tggggttctg 300
gccactgcat ctcatgccat tgcaactgga actctctttt ctgtattcta caaaccaaga 360
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ctatccattg gaatgaggtt taaaatgaaa tttgagggtg aagaagtttc agaaagaagg 480
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tggagatcct taaaggtcca atgggacgaa ccttcatcaa tcatgcgtcc cgacagagtt 600
tcatcatggg aattggagcc acttgttgtg actgctcctt ctaattccca acaggtacag 660
aggaagcgag cacggccaac tgttttacca tcatcatcag tgcaagaact ttctgcgttc 720
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gaaactatta ctgatccatg tacaccagtc aatgggaaag aatctagtga aaagagagag 960
agcggtgg 968

<210> 194
<211> 345
<212> DNA
<213> Eucalyptus grandis

<400> 194
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ctcgcgtcgt ctctccttct ctcgccctgt atatatctct cgtcccccga caaaaaaagg 120
agaaatctga agagagggga ctgaaattag gttattgaga aggattcttc ccgtgaccaa 180
tcttttggag aaagatggct tctcaattta atttcaaagg cataaccgat gcatcgcaag 240
ctgaaggagt agctgggaaa tcacacggaa atcactcttt aactcggcag ccatcaatat 300
atgctttgac ttttgatgag tttcaaaaca catggggtgg gcttg 345

<210> 195
<211> 456
<212> DNA
<213> Eucalyptus grandis

<400> 195
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gccgccgccg caaccacctc atcctcctcc tattcctccg ccgtggcggt cgccgcgaca 120
acagcaacaa cctcctcctc ctccacctcc tcgaccgggt cggatccggc gctagaaccg 180
agcaaaagaa gcgaggattg cacttctcaa aagggcccgg ggaagtcccc gagcccgggc 240
gcccacccgg aggagccggc cggcaagagg cacaaggccg gggctccgg cgagcacccg 300
acgtaccgtg gggtccgaat gcggaactgg ggcaagtggg tgtccgagat ccgggagccg 360
aggaagaagt cgagaatctg gctcgggacg taccccacgg cggagatggc cgcccgggcc 420
cacgacgtgg cggcattggc cataaagggc agcttc 456

<210> 196
<211> 569
<212> DNA
<213> Eucalyptus grandis

<400> 196
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agacgatgtt cccgagaccc aaagtcgacc cggcctccgc cggaaccgtc gtgatccgcg 180
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cctccgccgg cgggcactac cgccgcctcc gcccctccga ccactaccgc ctcctcaagt 360
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acctccccga cctcggctgc cccggcggcc cccgctacat ctgggagttc aacttccggg 480
acttcgacgt cgcccgcgac gcccacgccc cggactccat cgagctcctc cgccgccagg 540
ggatcgactt cgagcggaac cgggcggag 569

<210> 197
<211> 1007

<212> DNA
<213> Eucalyptus grandis

<400> 197
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gccgcagtgg cactggacga ggaaacgagt ttaaacgaga tggagctggt cgtggaaact 180
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aagagagagc cgagaagtct gtcagcataa atgagtttct aaagcctgct gaaggggaga 600
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gccagttccc ctcccttggt gggaaatgag gttttaccac tgcatacttc aagctgagtt 780
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<210> 198
<211> 390
<212> DNA
<213> Eucalyptus grandis

<400> 198
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gtgcgagccc aaaaatcgat ccttttctgc ttccttttgc ctctgttcca gctgtggtcg 120
agtaagcagg agtcaattga tactgggtcg atctggtcgg caacttttgt tggaagtttg 180
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<212> DNA
<213> Eucalyptus grandis

<400> 199
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<210> 200
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<212> DNA
<213> Eucalyptus grandis

<400> 200
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      <211> 376
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      <400> 201
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      <210> 202
      <211> 743
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      <213> Eucalyptus grandis

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cagagaactt actttcaagg gtaaacaact ctggtgccgt tgatcgaaga agtgaagatg     660
agggagaaat ttatgaaagg aagtcgaatt ccggtgccaa gcttcaccaa cttttggatt     720
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      <210> 203
      <211> 435
      <212> DNA
      <213> Eucalyptus grandis

      <400> 203
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      <210> 204
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<212> DNA
<213> Eucalyptus grandis

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<210> 205
<211> 694
<212> DNA
<213> Eucalyptus grandis

<400> 205
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<210> 206
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<212> DNA
<213> Eucalyptus grandis

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<210> 207
<211> 438
<212> DNA
<213> Eucalyptus grandis

<400> 207
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gctcggcggg cacaagcggt gccactacga ggcccccgcc cccatccccg cctccttctc 360
cgccccctcc gccgccgccg ccccggccgc cagcggggtg agcgtgtcgg agggcgtggg 420
gtccacgcac acgcagag 438

<210> 208
<211> 516
<212> DNA
<213> Eucalyptus grandis

<400> 208
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gagaatgata gtcttctcct tggtgatggc ccttggccgg agtttgtgaa cagtgtgtgg 180
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<210> 209
<211> 547
<212> DNA
<213> Eucalyptus grandis

<400> 209
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<210> 210
<211> 522
<212> DNA
<213> Eucalyptus grandis

<400> 210
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<210> 211
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<212> DNA
<213> Eucalyptus grandis

<400> 211
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<210> 212
<211> 850
<212> DNA
<213> Eucalyptus grandis

<400> 212
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<210> 213
<211> 534
<212> DNA
<213> Eucalyptus grandis

<400> 213

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<210> 214
<211> 358
<212> DNA
<213> Eucalyptus grandis

<400> 214

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<210> 215
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<212> DNA
<213> Eucalyptus grandis

<400> 215

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<210> 216
<211> 669
<212> DNA
<213> Eucalyptus grandis

<400> 216

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<210> 217
<211> 334
<212> DNA
<213> Eucalyptus grandis

<400> 217
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<210> 218
<211> 478
<212> DNA
<213> Eucalyptus grandis

<400> 218
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aacaaggaga gacaggacat tattacacag attattaagc ggaatccagc gtttaagccc 180
ccggctgatt ataggcctcc caagctacag aagaagctgt acataccgat gaaagagtac 240
cccggttaca attttattgg acttataata ggacctaggg gcaataccca gaaaaggatg 300
gaacgtgaaa ctggtgcaaa gatcgtcatt cgtggaaaag gttcagtgaa agagggtagg 360
ttgcagcaga agagggattt gaagcctgat ccagcagaga atgaggattt gcatgttttg 420
gtggaagcgg agacacagga ggcactagat gcagctgcag ggatggtgga gaaactgt 478

<210> 219
<211> 1677
<212> DNA
<213> Eucalyptus grandis

<400> 219
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tgacctcgga cttcctgtgg cccgatctga agagatcggc cggcaagcag tcgaggcggc 180
cggccaggtc ggaggtcgtc gatgtcgtgg acgatgactt cgaggccgac ttccagggct 240
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tgatgattat gtgtgataaa tgctgaaact ctgatgacag caatagcttg ttctgttggc 1620
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<210> 220
<211> 916
<212> DNA
<213> Eucalyptus grandis

<400> 220

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gccgagatcc ggctacccaa gaaccgcacc cgcctctggc tcggcacctt cgacacagcc 180
gaggaggccg ccctcgccta cgacaaggcg gcgtaccggc tgcggggcga cttcgcgcgg 240
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aagccgctcc attcctccgt ggacgccaag ctccaggcca tctgccagga catggccgag 360
aagccagccg acggcaagaa gaggcgctcg gcccccgccg gcggcggcag ctccgcagct 420
gccgcctcgc cgcggaggcc ggagccggag ccggagccgg tgaagacgga ggtgggagtg 480
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ttctttctct ttcgaatttc caagaagcgc agtatgtaat atgttaggag taatttaggg 780
aaagcagggg gctctgctgc gatggagttt ttggcagttg cagcggccac tgctaagcct 840
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atcatctcat gcattc 916
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<210> 221
<211> 567
<212> DNA
<213> Eucalyptus grandis

<400> 221

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gcgttgatct gctcctgatc atggccctga tcgtatggaa cgagcatgtt caatctctgg 60
caattctcca tgaaactgtt agcatttccg ctatgaccac cgtcgatggc catcccgtat 120
ggaccgcaga agccatggaa gccgggcatt tccttggata aacctgtctc ctccttggga 180
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ctaagtttga ggcaatggga agtggtgtct acacctggca atgaaggaaa gacagcgttg 360
gagagctgaa gaggacgcct tgttacgtgc atatgtgaaa cagtatggcc caagggagtg 420
gcaccttgtg tctcagcgca tgaacactcc ccttaaccgt gatgccaagt cctgcttaga 480
gaggtggaag aactacctga aaccaggtat aaagaaggga tccctcagtg aggaagaaca 540
gcgtcttgtc ttccatttgt tgccgtg 567
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<210> 222
<211> 985
<212> DNA
<213> Eucalyptus grandis

<400> 222

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aaaaggccgc gaaagcgagg taggaaacct gccaatggcc gagaggagcc attgaatcat 180
gttgaggccg agaggcagag gagggagaag cttaaccagc ggttttacgc gctccgggcc 240
gtggttccta atgtttccaa gatggacaaa gcgtcacttc ttggcgatgc gatagcgtac 300
atcaaggagc tgaactcgaa gctccagacc acggaatctg acaaggagaa tctgcagaag 360
caaatggaat ccttgaagaa ggaattaacg aataaagact ctcggtctgc tctgccccag 420
agcgataaag atctcagtat ctcgagcaat cacggtgcca agttgataga attggacgtg 480
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gacgtgaaga taatcggatg ggatgtgatg atacggattc aaagcagcaa gaagaaccac 540
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gacgcgaata atcaggggct gggatatttt aaggctcccg gcacagcaag ttctgaagca 840
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tattaggtac tttcgattgt ggagcactga gaggatatga aacaaggtgg aattgttgtt 960
gaagataaaa aaaaaaaaaa aaaaa 985

<210> 223
<211> 335
<212> DNA
<213> Eucalyptus grandis

<400> 223
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cagaggatct cacagacgaa gagtggtatt acttggtttg catgtccttt gtattcaatc 180
ctggcgaagg tcttccggga agagcgctag cggatggcca aactatctgg ttatgcaatg 240
ctcaatatgc agatagcaaa gtgttttctc gctcactact tgcaaagagt gcatctattc 300
agactgtggt atgttttccc tatctcggag gtgtg 335

<210> 224
<211> 377
<212> DNA
<213> Eucalyptus grandis

<400> 224
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aaagcgaacg ctacgatgag acgacagaga agcagcgaat caggagaagg ccgcaccaga 120
agccgtacag ggtatccgg atgaggaagt ggggtaagtg ggtggctgag atcagggagc 180
ccaacaagcg ctcccgtatc tggctcggct cctacgccac cgccgtggct gccgcccgcg 240
cctacgacac cgctgtgttc tacctccgtg gcccctctgc ccgcctcaac ttccccgacc 300
tcatcttgca cgagggccag gactcgctgg gtgaggtctc agccgcctcc atccgcaggc 360
gtgcagctga ggtcggg 377

<210> 225
<211> 394
<212> DNA
<213> Eucalyptus grandis

<400> 225
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aatcttcttt gaccctcgga caatcagaca cagcatagat ttaatctgcc cgaggaaaca 120
caaaagatgg ctttcactgg aaccgtggat aaatgtaagg tttgtgacaa gaccgttcat 180
gtcgtcgaca tgatgactct tgaaggcatt ccctatcaca aaacctgctt cagatgcagc 240
cattgcaatg ggacgcttgt gatgagcaac tattcctcga tggatggtgt tctctactgt 300
aagacgcatt tcgagcaact cttcaaggaa tccggtgatt tcaggaagaa tttccattca 360
gccaagtccg acaagccgaa tgagatgaca agaa 394

<210> 226
<211> 340
<212> DNA
<213> Eucalyptus grandis

<400> 226
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agtgggtggc cgagatcagg gagcccaaca agcgctcccg catctggctc ggctcctatg 240

ccaccccgt ggccgccgcc cgcgcctacg acaccgccgt cttctacctc cgcggcccct 300
ccgcccgcct caacttcccc gacctcatct ggcgcgaggg 340

<210> 227
<211> 571
<212> DNA
<213> Eucalyptus grandis

<400> 227
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<210> 228
<211> 726
<212> DNA
<213> Eucalyptus grandis

<400> 228
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gacgtcatgc ggacgaatgc ctcccgcaac tggacatgtc aaaacaacct cctacgcaag 180
aactagccgc caaggatctg catgggaatg aatggcgttt tcgacatatt ttccgaggcc 240
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ctctcaagaa gaattactcc attggcatga gattcaaaat gagatttgaa ggggaagaag 600
ctccagagca gaggtttact ggaacaataa tcggcattga agatgctgac ccaaaaggt 660
ggcgagatac aaaatggagg agtctcaagg tgagatggga tgagaattct gccatacctc 720
gtccag 726

<210> 229
<211> 752
<212> DNA
<213> Eucalyptus grandis

<400> 229
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<210> 230

<211> 563
<212> DNA
<213> Eucalyptus grandis

<400> 230
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gcctgaaggc cggcgacacc gtctgcttcc agcggtcgac cgggccggac aagcagctct 480
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ccgtacagat ggtgaggctg ttc 563

<210> 231
<211> 642
<212> DNA
<213> Eucalyptus grandis

<400> 231
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atgattgaag agaatgacat cgacattccc gtaaaaaaaa aa 642

<210> 232
<211> 1358
<212> DNA
<213> Eucalyptus grandis

<400> 232
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agtcccgacc ccccggcgcc atgacgcggc gatgctccca ctgctgcaac aagggccaca 180
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cctccttttc ctgttgtatc tgctttcttt aggctttc                            1358

<210> 233
<211> 506
<212> DNA
<213> Eucalyptus grandis

<400> 233
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gggagtctcg tggtctactt tccccaaggc cacagtgagc aagttgcagc atcaatgcag     180
aaggagacta cttgtgtacc cagctacccc aatctgcccg caaagttgat atgcatgctt     240
cacaatgtga cattgcatgc tgatctcgaa actgatgaag tctatgcaca aatgaccctt     300
caacctgtaa gcaaatatga ccaggaggcg ttactggcat ctgatatggg cctcaagcaa     360
agcaggcagc ctacagagtt tttctgcaag acgcttacgg ctagcgacac aagtactcac     420
ggtggatttt cagttcctcg tcgagctgct gagaagatct tcccatcact agattttact     480
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<210> 234
<211> 420
<212> DNA
<213> Eucalyptus grandis

<400> 234
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ctccaagcgc cccgcgcgg accctcagga ccagccctcc gaggaggagt acctggccct      180
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ccactacgac ggcggcagca gtagcagcgc cgcccgtgct gcctcttcct cagaagccgg     360
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<210> 235
<211> 476
<212> DNA
<213> Eucalyptus grandis

<400> 235
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gatgaggcaa cttaataatg ttccatcttc gattatgcca agtcacagta tgcatattgg     180
tgtccttgca acagcatggc atgccatttc aactggtaca atgttcactg tgtattacaa     240
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aacagaggtt ctctggcact gtaattggat ctgaggatgt tgatcctccg aggtggcctg     420
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<210> 236
<211> 799
<212> DNA
<213> Eucalyptus grandis

<400> 236
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aacagcatga gtcctcccct gcaactggag tgcctcatcc tggtgtctct ttgcccaatg     120
tccaatatgc aacgcctcca caacttggag cgggacatgc catgacacca cctgcttacc     180
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<210> 237
<211> 298
<212> DNA
<213> Eucalyptus grandis

<400> 237
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ttaaagggca taacaaatta attctgggat tcaatacttt cttgccaaag ggatttgaaa 180
tatcccccga cgaggatgaa acaccaataa aaaagaatgt ggaatttgaa gaagccatct 240
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<210> 238
<211> 521
<212> DNA
<213> Eucalyptus grandis

<400> 238
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<210> 239
<211> 337
<212> DNA
<213> Eucalyptus grandis

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cgacgtcatc tcgtgggggg agagcggccg gacgttcgtg gtgtggaaga cggcggagtt 180
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cttccagcgg ggccagaaag aactcctctc cgagatc 337

<210> 240
<211> 334
<212> DNA
<213> Eucalyptus grandis

<400> 240
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ttctgatatc gccaagatac gcaagctcgt gagg 334

<210> 241
<211> 422
<212> DNA
<213> Eucalyptus grandis

<400> 241
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gtccagaagg ccgaccgcga aaagctaagg agggatcgtc tgaacgagca cttccttgaa 360
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ac 422

<210> 242
<211> 737
<212> DNA
<213> Eucalyptus grandis

<400> 242
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gaccaccacg acgtcagccc gcagagaccg acctcgagca gcttaagcag caccgtggtg 660
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ccgccgcgcc accgccg 737

<210> 243
<211> 542
<212> DNA
<213> Eucalyptus grandis

<400> 243
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caacaagctt tacaggggag tgaggcagag gcactggggg aaatgggtgg ctgagatcag 480
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tc 542

<210> 244
<211> 848
<212> DNA
<213> Eucalyptus grandis

<400> 244
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gccggctaac ccaagcgcct tttcaccgta tacaaaccgg ctgccgagtc aagaccgagg 180
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<210> 245
<211> 181
<212> DNA
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<400> 245
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tcttgccgcg agctcatcat cgccatcgtt acaagggagt gaggatgcgg aagtggggga 120
agtgggtggc ggagatacgg cagcccaaca gccgggaccg catctggctc ggctcctacg 180
c 181

<210> 246
<211> 117
<212> DNA
<213> Eucalyptus grandis

<400> 246
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gcggtcgcgg ctgcggaagc agcagcactt ggacgagctc acgaccgagg tgggtcg 117

<210> 247
<211> 597
<212> DNA
<213> Eucalyptus grandis

<400> 247
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gccgccgccg ccgggcccgg gccttacttc cccggcgcgg ccgcaatgtg cttcccggtg 540
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<210> 248
<211> 361
<212> DNA
<213> Eucalyptus grandis

<400> 248
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ctcaagtgtt gctgcaaatg cagaaaagct tgctgccttg cagaacgaat atcattttgc 180
taaagcaagg attgatgaag atcatgagaa ggcgcagcga ctggagaaga aggtcaaaac 240

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caagcagctg gacactgcag ggacagaact cgagtgtttc ccagctctgc agaagcaaga      360
g                                                                      361

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      <212> DNA
      <213> Eucalyptus grandis

      <400> 249
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ctatcgcagg gcctgcgata cagacgcttg gctgccaagc atgaagagaa gccctccgct      120
gtgctcgaca aatcccaaga tcccacagac agcgcaaagc catccaagaa gccccgccat      180
cgtcacagtc ccacccagct cgctgccctc aacgaactct ttgagaaaag cgaacacccc      240
actcttgagg agcgaggcca gttggctgag aaattaggaa tggagaccaa gaccgtcaat      300
gcatggtttc agaacaagcg tgcttctact aagaagcgca ataagggggg aacctcggaa      360
cctcacccag ccacgagtca gaacgacttg tccgaagatg ctctcaaaac cccttccgca      420
ctgccgtcga tagcgaacct gctcaacgac gcaccctcat cggcctcgcc gc              472

      <210> 250
      <211> 302
      <212> DNA
      <213> Eucalyptus grandis

      <400> 250
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tgacgcgaac agcgtcggcg acaacgcgtt catcgcggat cacgacgcaa ttgactcggc      180
cggcgacgac gacgacgacg aagacaagcc caagaccggc cagaagcaag gccgccgcaa      240
aataaagatc gagtttatac aggacaaatc gagacgccat atcaccttct ccaaaaggaa      300
ag                                                                     302

      <210> 251
      <211> 708
      <212> DNA
      <213> Eucalyptus grandis

      <400> 251
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ttttgtgtca gtcatcttgg tggggttcct gattcacaat cttcttcata cgcagcagag      180
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ctccctgatg caaacttttt ggtttcggaa actgcaagtc ctgactatct tgaaactctg      300
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cagtttcttg cggcaagtcc acttactgca gacacagagg agattagttc gacctctcat      480
gaaactggca tcacgaatga tcaagagtca cacactaagg tggagaatgg atttgagaag      540
gcccattaca tggatcatct taccaaacag atgggtcatc tcacctccaa caacggaaca      600
ggatgatatg ttcttatcta ctttgtacac tggataatct ctttcagact agaggtgaat      660
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      <210> 252
      <211> 563
      <212> DNA
      <213> Eucalyptus grandis

      <400> 252
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catcaatcaa gctcaagcac catcacctca agaagaaaga aggaaagaaa gagagaagga      180
ccggagaccc gacagagggt cgcgcgcgca cgagacatgg gacgatcccc ttgctgcgag      240
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aaggcgcaca ccaacaaggg cgcgtggacc aaggaagagg accagcgcct catcgactac 300
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tgcggcaaga gctgcaggct caggtggata aactacctcc gccccgacct cagcgcggca 420
acttcaccga ggaagaagac gagctcatca tcaagctcca cagcttgctc ggcaacaagt 480
ggtctctgat cgcggggaga ttgcccggaa gaaccgacaa cgagatcaag aactactgga 540
acacccacat caagcgcaaa gct 563

<210> 253
<211> 397
<212> DNA
<213> Eucalyptus grandis

<400> 253
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gcgccgttcc tgacgaagac gttcgagatc gtggaggacc cggcgacgga cccgatcgtg 240
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ctgctcccca agcacttcaa gcacggcaac ttctccagct tcatccggca gctcaacacc 360
tacggtgtgt tcgatgagta tgatactgca agtttta 397

<210> 254
<211> 353
<212> DNA
<213> Eucalyptus grandis

<400> 254
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<210> 255
<211> 541
<212> DNA
<213> Eucalyptus grandis

<400> 255
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t 541

<210> 256
<211> 477
<212> DNA
<213> Eucalyptus grandis

<400> 256
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<210> 257
<211> 351
<212> DNA
<213> Eucalyptus grandis

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ccactacact gtcataaaat tcccaacttg aatttgaaaa aaaaaaaaaa a 351

<210> 258
<211> 360
<212> DNA
<213> Eucalyptus grandis

<400> 258
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tctgccagga gttttccagg cattagccag tttttcatcc ttgttcatgg aggtccttga 240
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<210> 259
<211> 318
<212> DNA
<213> Eucalyptus grandis

<400> 259
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<210> 260
<211> 503
<212> DNA
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<210> 261

<211> 546
<212> DNA
<213> Eucalyptus grandis

<400> 261
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<210> 262
<211> 883
<212> DNA
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<400> 262
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ggtggcctac aggagaagag gagtggtggc cccagcttgg cctgcccgcc gaccagggac     360
ctccgcccta caagaaacct cacgatctca agaaggcttg gaaggtgagc gtcctcacgg     420
ctgtcatcaa gcacatgtcg ccggacatct ccaagatcag gaagctcgtc cgtcagagta     480
aatgtctgca ggataagatg accgcaaagg agagtgccac gtggctcgcg ataatcaacc     540
aggaagaagc tctgtccagg aaattgtacc ccaatagctt cccgcccgtg tgttcggaca     600
gtggatttgg gtcctatgtc atcagcgatg ctagtgatta tgatgtggaa ggagctgatg     660
atgaaccaaa gttcgaggcg gaggaatgca agccttttga tccaagtgct tttggcatcg     720
ggccaagggt gtctacaggc gagcttttga tccatccact ggtttctcaa atcaaaggag     780
aagttaatga aaccaaaacc aattcgcggc tagtttcaaa gaggaatcaa ccatccgatg     840
agccgaaggc gaagatggat cagaagatat acacatgcga gtt                      883
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<210> 263
<211> 454
<212> DNA
<213> Eucalyptus grandis

<400> 263
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gttcgacgag ttcacagcga gctgacaaat cattgatcat ggagcatgag tttagttcgg      60
ctaaaatcaa agctcttctt gagattctac agtcgcaatg cagaggagaa agtgcaaatg     120
cagagcttca tggtcccatg ggctgtgacg atgagtctct ttttgaaaat acaggcaccg     180
gggattctac atacagagtt aaagctgtta agcacacaac tgtttattca agttctcctc     240
ctgaaggacc aattaaagca attgtctttt ctcagtggac gagtatgtta aacttggttg     300
aacaaaatct gatccatttt ggcataaatt atagacggct tgatggaaca atgacccttt     360
ctgcaagaga caaagctgtg aaagatttta acaccgatcc tgagatagtc gttatgctaa     420
tgtcattaaa agcaggaaac cttggtctaa acat                                 454
```

<210> 264
<211> 579
<212> DNA
<213> Eucalyptus grandis

<400> 264
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agtgaattcg gtggggagtt aatgaatcca agaagcaact ggctaattgt atataatgat      60
gatgagggtg acatgatgct tgttggggat gacccgtggc aggaattttg tggcattgtc     120
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cgaaagattt ttatttatac tagagaggag gttcaaaaga tgaagccagg gactattagt 180
gccaaagatg aggacaattt gatggtcgat gaaggggtgt tttcaaagaa aatgacttcg 240
gacacgctgc cttcggcgtc tgacccaaag aactgttaaa attctctcat gtctgtgagg 300
tctttaaagt cattggagaa gcctaatcca gccgctacag ttccctgatg ctgaaattca 360
tctttgtcca cggggactgc acataatctt ctctgtctat atcctctgtg cttcagtgac 420
cattttctgc cccgcaaagc cgtatttgta tcatcaatgg gattcttgga tttggcttca 480
agatgcatgg ccccctgagg aggccagaga gcctgacaga gaactacggc agattgaaaa 540
ggagagaaat gaggcctgtt cgtattcagc attttgaga 579

<210> 265
<211> 366
<212> DNA
<213> Eucalyptus grandis

<400> 265
atcgaggccc tgaaaaaacg gttggacgat gtgaatgcca agtatgcggt ctcggtcgag 60
ttcaccaagg ccatggcact gaaccacctc aagaacggcc tgcctcgcgt ttttaaggca 120
ttgatggaat tctcaggtgc ttgcactaag gtattcgagg ctttgaataa cccccgcgag 180
caggtaggca gtcgtgagaa tgagccgcgg gttttgcctg cgtgatttca tggatgcctc 240
aggccgtgtg tataatttgt ttcaacattt ggtaaacctt gataaggtgt cattgcattt 300
gcatagaaat actgtgaaat tctttttaa ttttggtttg atcttagctt gaaaaaaaaa 360
aaaaaa 366

<210> 266
<211> 376
<212> DNA
<213> Eucalyptus grandis

<400> 266
gcagattctc cccccgaacg ccaagatctc gaaggaggcg aaggagacga tgcaggagtg 60
cgtttctgag ttcatcagct tcgtcaccgg tgaggcctcg gacaagtgcc acaaggagaa 120
gcgcaagacc gtgaacggcg atgacatcgt ctgggcactt gggtccctag ggtttgatga 180
ctatgccgag ccgctcaagc ggtacttaaa tcggtatcgg gaggtcgaag gggagagggc 240
cagccaaaac aaggtcacag gcggcgaatc aagaaacgag aagaacttgt acggggatga 300
gtcgccggag aagcagctgg gcgctgcctc ttcgtcgcct ctgaagttct ttgatgtggc 360
cgacaggagt accaat 376

<210> 267
<211> 341
<212> DNA
<213> Eucalyptus grandis

<400> 267
gtcaactcgg tgttcgagct gcacaagctg ctggcccgcc cgggggcgat cgagaaggtt 60
ctgggcgtgg tgcggcaggt gcggccggcg atcgtgacgg tggtcgagca ggaggccaac 120
cacaacgggc cggtcttcgt ggaccgcttc aacgagtcgc tgcactacta ctccaccttg 180
ttcgactccc tggagggctg cgccagcacg caggacaagg ccatgtcgga ggtctacctc 240
gggaagcaga tctgcaacgt ggtggcgtgc gagggcgccg accgggtcga gcgccacgag 300
accctcgccc agtggcgggt ccgcctcggc ggcgccgggt t 341

<210> 268
<211> 343
<212> DNA
<213> Eucalyptus grandis

<400> 268
tcgctgttca atacctccaa gtcgaacaag cacctctggg agcagatctc gtccaagatg 60
agagagaaag ggttcgatcg ttccccgacc atgtgcacgg acaagtggag gaacctgctg 120
aaggagtata agaaggccaa gtaccaggat agaggatccg cgaagatgtc gtattacaag 180
gagattgagg agattctgag ggagaggagc aagaataatc agtataagag tccgacggcc 240
tcggctttga aggtcgatcc ctacatgcag ttttctgaca aaggcattga ggatgctggg 300

atgactttcg gacctgtaga agcaagtggt aggccgactc tca 343

<210> 269
<211> 546
<212> DNA
<213> Eucalyptus grandis

<400> 269
atgacctcga actaaaagtg cgagaactgg aaactgtcat gctaggaccc agctcagata 60
tgccccacac ggttgatatc aacttcttgg ttggatctgg ccagatgtct caggagacgg 120
agacattgat ggagattatc tccaggaggg acctaaagga gattctctgt gcttgtgcta 180
aagcagttga agacaacgac accttaaaat ttgagtgttt aatatcagag ttacgcccga 240
tggtgtctgt ttccggtgac ccgatccaac gattatcagc atacatgttg gaagggctca 300
tagcaagatt ggcaagttcg ggaagctcta tttacaaagc tttaaagtgc aaagagcctg 360
ctggtgcaga gctgctatcg tacatgcaca ttctctatga tatatgtcct tatttcaagt 420
ttgggtacat gtcggcgaac ggatcaatcg cagaagtcat gaaggacgaa aacattatcc 480
atataatcga ttttcagatt gctcagggag gccagtggat caccctgatt caggctcttg 540
cagcac 546

<210> 270
<211> 283
<212> DNA
<213> Eucalyptus grandis

<400> 270
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gaagccacct caagtttcaa attttttttcc tgcgcagttc tcaattcaaa tggcacgtag 120
ctcatgtaat cagaaactga ggaaaggttt atggtcgcct gaagaagacg agaaactgtt 180
caattatata agtagacatg ggttgggatg ctggagttcg gttccgaagc tagctggttt 240
gcagagatgt ggaaagagtt gcagattgag gtggatcaac tat 283

<210> 271
<211> 377
<212> DNA
<213> Eucalyptus grandis

<400> 271
atttcttcct ggttcttgat agaagattga aggttctaga acaagaggaa gaaagctagt 60
gcaaaagaaa gaaagtaaaa agaggtattt ctgctgcttt attagtttat tgtggagtat 120
ggcaagtgga atggagaacc gggggaaat tcctgcgaat ttgaagaaac agcttgctct 180
ggctgtgaga aaaatccaat ggagctacgg aatcttctgg tccatctcaa ccagacagcc 240
tggggtcttg gagtggggtg atgggtacta caatggagac atcaaaacca ggaaaacaat 300
tcaagctgtg gaacttaata ctgaccagat tggtatgcag agaagcgagc aactgaggga 360
actatatgag tctctat 377

<210> 272
<211> 548
<212> DNA
<213> Eucalyptus grandis

<400> 272
ggaatatcca gaggaatgag taccataatc tttttaactt catcagtggg aaggggttga 60
agatcatgaa cttgggagag cagggcgctg atggagtacc aggcgttctt gatgtggatg 120
acgacgatgc tgtcgatccc catcttgagc gcatcaggat tgaagccggt gtagatgaaa 180
gtgatgaaga ggatgaagat tttgtcattg ataaggatga tggaggatct cctactgatg 240
attctggaga tgacgagtcc gatgtcagtg aaagtggaga tgagaaggag aaagagaagt 300
atgggaaaaa ggaatctcga aaagaagtca aagcatcatc aagcaagaag aaagcaaaag 360
ctggagatga agaggggtcg aagaagaaga aacagaagaa gaaagacccc aatgcaccaa 420
aaaaggctat gtctggttat aactttttct tgcagacgga aagcgagaaa atgaagagaa 480
ctaatcccgg tctttccttt ggggatgtat caagagaaat tgcagacaag tggaggggtt 540
tgtcagcg 548

<210> 273
<211> 420
<212> DNA
<213> Eucalyptus grandis

<400> 273
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ccttggctcc gttctgttgc ttcctctctc tgtcttcgac acttcaactg tgcgagccca 120
aaaatcgatc cttttctgct tccttttgcc tctgttccaa gagtcaattg atactgggtc 180
gatctggtcg gcaacttttg ttggaagttt gaggaatctg attgagagaa gaggtagatc 240
taaaggatca aaaggatgtc atttaccggc acccaagtta aatgcaaggc ttgcgaaaag 300
acagtttatc ctgttgaaca gttatctgcg gatggggttg cataccacaa gtattgcttc 360
aagtgcagcc actgcaaagg cacattaaag ctgagcagct actcctcaat ggaaggagtt 420

<210> 274
<211> 454
<212> DNA
<213> Eucalyptus grandis

<400> 274
gataaatcgt cttcaccagt acctccgcag gatcagacgg gtgttcatgt ttatcatcct 60
gattgggctg ctatgcatgc atactatggt ccaagagttg ctcttccgcc ttattataat 120
tctgctgtat catctggtca tggtcctcat ccctacatgt gggggccacc acagcctatg 180
atgccaccat atgggccacc ttatgctgca atatactcac atggaggtgt ttatggacat 240
cctgcaattc ctcttactcc gactcccttg gctgcggaaa ctcctaaaaa gtcatctgct 300
aattctgata atggactggt gaagaagttg aaaagttttg aagggcttgc aatgtcaata 360
ggcagtgggg gggatgcaga cagtgctgac gatgggactg ataaaaggtc atcacagagt 420
gcagactcgg gagactcaag tgatgaggat caat 454

<210> 275
<211> 620
<212> DNA
<213> Eucalyptus grandis

<400> 275
gcgatttaaa cagctactgg aggaggcatc acaggatatt gatcacacaa ctgactatta 60
cacttttaga aagaaatggg gcaatgatcc acggtttgag gccttggatc ggaaagatcg 120
agagaattta ttgaatgaaa gggtcctccc tttaaaaaag gctgctgaag aaagggctca 180
agcaatgcgt gctgctgcca cttctagttt taaatccttg cttcgagata gaggagatat 240
aactgtcaat tcccgttggt ccagggtaaa ggatagtctc agggatgacc caagatacaa 300
gtcagtgaag catgaagaca gggaggcctt gttcaatgag tatatagctg aattgaaggc 360
tgtggaagac agagaagaaa aggaggcaaa agctaagagg gaagagcagg agaagctgaa 420
ggaaagggaa agagaattgc gaaaacggaa ggaaagagaa gaacaagaaa tggagagggt 480
acgagtgaaa atacgcagga aagaggcaat tgcatctttt caagcattgc ttgttgaaac 540
aatcaaggac cctcagcttc ctggacagag tcaaaagtta aacttgacaa agatcctcag 600
gacgtgcgag taatcctgat 620

<210> 276
<211> 340
<212> DNA
<213> Eucalyptus grandis

<400> 276
gagataaaga actactggaa tacaagaatt aagcgactgc aacgcactgg catgcctata 60
tatccaactg aggtttgtct gcaagtgtca agtgagaatc aagaaactca taacatgggt 120
aacttgcata ctgcaggcga agataattgt gatctctcac aggcagatcc actcgagatc 180
ccagaggtgg atttagaaa actggaactg catcttggtt tctcgtcttt ttggtctaca 240
cttctggacg ttcctccttg tggctttggg agagaggcaa tgtgtctatc tgatgcttac 300
tgccttccat ttccatcaag ccggtctcct aaacgccttc 340

<210> 277
<211> 351
<212> DNA
<213> Eucalyptus grandis

<400> 277
cgacgacccg catacccgct gccaatctgg aggacctatt tgacaaccat aacatggctc 60
gaatacggga cgtatgggcc ccgaatcttg agatagagat gcagaacatc cgcgaggcca 120
tcgagaaata ctcgtatgtt tcaatggaca ccgagttcct gagtggggcg cggcccatag 180
gtaacttcaa aacgtcctcg gactaccact accagacgat gcgctgtaac gtcgaccttc 240
tcaagatcat ccaagtcggg atcacgctgg cagacgagga ggggttgttc ccgcaggact 300
gctctacgtg gcaagttcaa ctttaaattt agtctttggc gacgacatgt c 351

<210> 278
<211> 337
<212> DNA
<213> Eucalyptus grandis

<400> 278
gcagccgagt cgagcaagaa actaacgaac gcccggtgtc attaggattc ataatccaca 60
agaacaaaag aaaaaaggat catgggaaga tccccatgtt gcgaaggcaa tggcctgaag 120
aaagggccct ggtcttctga ggaagacaag aagctccttg attttatcca gcagcacggc 180
catgggagct ggatctctct ccctaaacgt gcaggtctta atagatgtgg caagagctgc 240
agattgagat ggataaacta cttgtggccg gacatcaaga gagggagttt ctccccggaa 300
gaagaacaaa ccatcttgca tctccactcc gtgctcg 337

<210> 279
<211> 383
<212> DNA
<213> Eucalyptus grandis

<400> 279
ctccaacgcg cgccttcttc tcctggactc ctctgagctc tctccatctc ctccggctcg 60
gcgcggccgt cgctcgacgg cgacgactcg agggtttcca tataattcac ttgaaagaag 120
ctgcagaatg ccgtggaaaa caggacttac cggctctaaa acggaagaag ataaggctct 180
gcagctttgt cgggagagaa aaaaatctgt taggcaagct gttgatggtt ggggctccct 240
tgtgtatgca catttcatgt ttgtgcaatc attaaggaac gtagggacag ctctcacaaa 300
gttctttgaa acagaatctc caaatgggtc tccctcgtat gcctcaatga gtacaacacc 360
tgagccaatc gcattaaccg aga 383

<210> 280
<211> 312
<212> DNA
<213> Eucalyptus grandis

<400> 280
ggtttgctca gatgcagcaa gagctgcagg ctcagatgga ctaattacct ccgtcccggt 60
atcaagcgcg gtagcttcac ggaccaagag gaaaagatga tcgtccacct tcaggctctt 120
cttggtaata ggggggcggc catagcttcg taccttcctc agaggactga caatgatatc 180
aagaactact ggaataccca tttgaagaag aagctgaaga agcttcaagg ccaagcaaat 240
cctgatgatg atgaccataa tcatcaccca caagggttca acgcaacttc acactccaac 300
cccaagggcc ag 312

<210> 281
<211> 311
<212> DNA
<213> Eucalyptus grandis

<400> 281
gagatggcga ggacaccatg ctgtgagaag atggggatga agaaagggcc gtggactcca 60
gaggaagacc agatcctgat ctcccacatc caccagtttg gtcactcaaa ctggcgtgca 120

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cttcctagac aagcaggtct gttaagatgt gggaagagtt gcagactccg gtggataaac      180
tacttgcgac ccgacgtgaa gcgagggaac ttcaccgacg acgaaagaga caccatcatt      240
gaacttcatc aagttcttgg caacagatgg tcggccatag cctcgagatt gccggggcga      300
acggacaatg a                                                           311

      <210> 282
      <211> 378
      <212> DNA
      <213> Eucalyptus grandis

      <400> 282
catggacagc tgaagaggac aagaagctca tcaacttcat cctcacccat ggccaatgct       60
gttggcgggc tgttcccaag cttgctggac tgctgcggtg tggaaagagt tgcaggctga      120
ggtggaccaa ttacctgagg ccagacttga agagaggcct tttgtccgag tatgaagaga      180
aaatggtcat tgacctccat gcgcaacttg gcaacagatg gtcgaaaata gcctctcacc      240
tcccgggaag aacagacaat gagatcaaga atcactggaa cactcacatc aagaagaagc      300
tcaagaagat gggcattgat cctctcactc acaagccatt agtcaccaac aacgacaaca      360
caaccgatca acaacccc                                                    378

      <210> 283
      <211> 389
      <212> DNA
      <213> Eucalyptus grandis

      <400> 283
ctccctcctc ctccaaacgt ttccgtttct ctccaagctg aacatggaca agaagccaga       60
cgacgacagt ggtaagtccc aagatgtcga ggtgagaaaa gggccgtgga cgatggaaga      120
ggatctcatc ctcatcaact acatagcgaa tcacggcgaa ggcagttgga actccctagc      180
caaagctgct ggtctaaaac gtaccgggaa gagttgtcgg ctccggtggc tgaactatct      240
gcgacccgac gtccggagag gcaacatcac tactgaggag cagctcctga tcatggaact      300
gcatgccaag tggggaaaca ggtgagatgc acataagtca cacaactttt cgttacatag      360
gttctacaac ataataccca tcgatcata                                        389

      <210> 284
      <211> 385
      <212> DNA
      <213> Eucalyptus grandis

      <400> 284
ccaatggtga cagtgttaag gatgaccttg atacagatga atatgaaact catgccacag       60
ttttggataa gctattagca tgggagaaaa agctctacga agaagtgaag caaggtgagc      120
acatgaagct agagtatcag aaaaaggtgg ctttgctaaa caagcagaag aaacgtggtg      180
ctagtggtga atccctggag aaaacaaaag cagctgtaag tcatttgcat acgacataca      240
tagttgacat gcagtccatg gattcaactg cttcagaaat aaaccacata agggacaaac      300
agctgtaccc aaagcttgcg caacttgtcg atgggatggc gaatatgtgg gaaaaaatgc      360
gcatgcatca tgataagcag gagtc                                            385

      <210> 285
      <211> 461
      <212> DNA
      <213> Eucalyptus grandis

      <400> 285
caccggaaac agtccatgtt cagaattatt ctccaattca tcaaatgggc attgatggat       60
tctttccagc gcatccctcc ccacagaatc cttcgtacca ttcttactcc cccaacaata      120
gacccaattt ccctcctccg tcccctcaaa cttcacagtg ggactatttt tggaacccct      180
tttcatccct ggactactat ggataccccca ctcggagtag tattgatcat atggctatgg     240
atgatgagac cagaggattg aggcaggtcc gagaggaaga ggggattcca gacttggaag      300
aagaaactga gcacgaagaa tgtgatcacc actcgtatgt tgatgaagat agaggcaaca      360
gagatgctaa tttccccact gaggaagttt tagtggaaga tgttgatgac gaggaagagg      420
atgaggatga aggaaacaga cacagctgtg aatctgagga t                          461
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<210> 286
<211> 438
<212> DNA
<213> Eucalyptus grandis

<400> 286
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caggtcgtgg aggtggttag cgggctcgcc atcgatatac ccgagatacc tgatccgctt 120
atgaacccat ggcagctgcc ctgcccgatg cagccaatta cggcgtctgc cgacatgttg 180
cagctgtgag catcagattg gaagtgtaaa agttggggct gattcttttg gagtcccctt 240
ctggggggat ggtagatcca tagccatttg ctgcttttgt ttttcttgtc aattccgttc 300
tctttcttga agttggaact ccaatatctg tatgcgtctg tctagatgga ctggcgcttt 360
tatgtctgct tgacattgta cttggctgtt cttgcttgtt acttatggga tgttcctgtt 420
ctaaaaaaaa aaaaaaaa 438

<210> 287
<211> 405
<212> DNA
<213> Eucalyptus grandis

<400> 287
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ctgatccaag ctgaagatcg tgctcacagg attggtcagg tatcttcagt taatatatat 120
tacctgctgg caaatgacac tgttgatgac ataatatggg atgttgtcca gagcaagttg 180
gaaaatttgg gtcaggtgct tgatggccat gaaaatacat tggaagtctc agccagccaa 240
ccaactagaa acagccctgc aaagcaaaaa acctttaata gccctggcaa acagcataca 300
tttaatagcc ctgggaagca gcaaaaattt aatagccctg gcaagcagac aacactcgac 360
tcgttcatga agcgttgcaa tagtggtgac ccctctgaac atcag 405

<210> 288
<211> 515
<212> DNA
<213> Eucalyptus grandis

<400> 288
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acgcgcagag cgacccaaga gtgtttcaga acagtccgtc catggccttg gaagctatca 120
actctcccac cgcggcctca gcgccgttcc agttcatgga ggagcccttg agctcccgct 180
tcttggagcc cctgaacaag cgcaagcgct ccaagcgccc ccaccaccct ccctccgaag 240
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accaccacgc ctcgcccgct cctcttcctc ctcctcctcc tcctgcgccc actaagcctg 360
aagaagccgc ggcgaccgcc acggcaaccg cggcccggc gaataacttg agctacaagt 420
gcgccgtctg cggcaagggc ttcccctcct accaggccct cggcggccac aaggccagcc 480
accgcaagtc ggccgccgcc gccgccgccg ccgcc 515

<210> 289
<211> 375
<212> DNA
<213> Eucalyptus grandis

<400> 289
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catatgtcct gtggttgctg tgactcaatg ggttggtgag attaattgct ccactgccca 180
aggaagcact aaggtcctag tatatcatgg agcaaataga ggaaagactg ctgatcagtt 240
caagaacttt gattttgttg taaccacata ttcacttgtt gaaggcgagt acagaaaatt 300
tgtgatgcca cccaagaaga agtgcattta ttgtgggaag ttgctttaca aggagaaaat 360
gacagttcac cttag 375

<210> 290

<211> 590
<212> DNA
<213> Eucalyptus grandis

<400> 290
cccagattta ccaggagatg acttagcatt ggaattcgag gaattcgatt tccagagcct 60
gttcgacgaa ttatcgcctg atgccgcggg ccttctcgac gccagcgatg tcgatgcttc 120
gtctccggga tcgctgtcct cgtggatcgg cgagatcgag ggcatgctga tgaaggacga 180
cgaggaagcc gtcgccgtcg agccgagtca ggaggtcttc gatcgcttct tcgccggctt 240
gctcgttgat tcccccgagg gcggaccggc cgaggcgacc gacggcgcga gcgacaagga 300
gtccaattca tccgacggcg gcggcggcgg cggcggcgaa cgggatgaga agctggtcgt 360
cggagataac gagctttccg aggacgctga tgatgatgat cccgtctcta agaaacagag 420
aaggcagctc aggaataagg atgcggcggc taggtcgagg gagaggaaga gaagttacgt 480
gaaagagctg gagatgaaga gcaaatatat ggaaggggaa tgccgcaggc tggggcggtt 540
gctccagtgc tttgtggctg agaatcaagc tctgcgtctg aatttggaga 590

<210> 291
<211> 307
<212> DNA
<213> Eucalyptus grandis

<400> 291
gtgatttcga gtcagagcat gcaccttgga gttcttgcaa ctgcctccca tgctgtcaca 60
actcaaactc tgtttgtagt ttattacaag ccaaggacta gtcaattcat cataagcttg 120
aacaaatatt tggaggctct taacaataaa ttcacagttg gaatgagatt caagatgaga 180
tttgagggtg aggattctcc agagagaagg ttttctggta caattgttgg ggtggaagat 240
ttctcacctc aatgggataa ttcaagttgg cgatcattga aggttcactg ggacgaacat 300
gcgtcat 307

<210> 292
<211> 209
<212> DNA
<213> Eucalyptus grandis

<400> 292
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gctcttgact gcacacaagc tgtgtggcaa taaatgggcc atgatcgctc ggctcttccc 120
cggccggacg gacaacgccg taaagaacca ctggcacgtg atcgtcgcga ggaagcagag 180
agagcagtcc aacaacgccc gcggccgga 209

<210> 293
<211> 224
<212> DNA
<213> Eucalyptus grandis

<400> 293
ctcagaagta cttcatcagg caatctaacg tgtcaaagag aaaacgacgt tccagtctgt 60
ttgatattgt ggcagaggaa tcggttgatg tgccaatggg atcaagggac ttctttgcgg 120
tcgacgagca acagcaggaa acagaagtaa atgatgcctt gcagcagctg ccacctgatg 180
ttgatgaaga atgtgaatct atggactcca ccaactcaaa tact 224

<210> 294
<211> 185
<212> DNA
<213> Eucalyptus grandis

<400> 294
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gatgtctggt gaaatcccct gtgctagtat tgacagccca tctgttagga ctacatctgg 120
acctctgggt ccttttgata aacatgtgca ctcgcttccc tatgttgatc ccagacagcc 180
agttc 185

<210> 295
<211> 428
<212> DNA
<213> Eucalyptus grandis

<400> 295
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tcagcccgcc cctctccgcc cacgtggcca gccacaaggg gctccatcaa gcgagcaagc      60
ccaagatcca cgagtgcaac atatgtgggt ccgagttcgc gtcgggtcag gccttgggcg     120
gccacatgag gcggcacagg tccgccccgc cgccgacggc caccagcgcc gacgcgacga     180
gccccaccaa cccgccggct gctgcggcca tcaccaccga gaagtcccgc aacatcctct     240
ccttggacct gaacctgccg gccccgaacg gaggaggatc accaccacca agcgcaccgc     300
cgccgggaga actcgaagtt ccaattcgcc acaagtcaac agcccatcat actagcctcg     360
cccgccttgg tggattgcca ctactgaaaa aaaaagaaaa gacgggttca catgtcaatc     420
aatgtaac                                                               428
```

<210> 296
<211> 418
<212> DNA
<213> Eucalyptus grandis

<400> 296
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gcagtttcgg atattaattt ggtttccaat agcacacata gttcatacga agatggggga      60
agcccacgga gaattacatc agaaagtgac cctaaagatg ctccaatggg aactgagagc     120
cttttaagtg cacctgaagc agtagagctt tcagatacag ggacttcctt cacgttcaag     180
atggattcat ctatgcaaag gaaaccacca gtagatgaaa gcccaaggat gcatccgttg     240
cccatgaatc taactactga agagggagat aacaatgttt cgtgccaact aaatctatct     300
cttgcatctt ctctactgca agttgaccac agtcaacaat tcaatcgttt gaatgtgcta     360
ggttcagaaa ctagcaagtc tccagatgca aggtcaaatg ccagcatcac agaatctg       418
```

<210> 297
<211> 250
<212> DNA
<213> Eucalyptus grandis

<400> 297
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tgcacccaga gtataactcg agtccagtgg gttacatgga gaccaacaag gctcgtttgg      60
tgttggagaa ggacgactta gggttgaatc ttatgcctcc ttcgacttgt taaggttctt     120
ggcgatgatt atgatatgat gatcagtttt tcctgcatta tttgaagaag ctgaggctga     180
ggtttcttgt cttttctttt tcctttttgt tatttttgaa gaggttttct tttctctatt     240
tccccccca                                                              250
```

<210> 298
<211> 626
<212> DNA
<213> Eucalyptus grandis

<400> 298
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agaacatagg tgcgaaggcc gatgtgttcc acatactctc tggcatgtgg aagacgcccg      60
ccgagaggtg tttcatgtgg ttgggcggtt tccgttcatc tgaacttctc aagatactag     120
ggaaccacct ggagcctttg acggatcaac agttgatggg catatgtaat ctgcagcaat     180
cttcacaaca ggctgaagat gctttatctc agggaatgga agctctgcag caatctctcg     240
tggacacact ttcttcgacc acactgagtc ctactggttc aggcaacgtc gcagaataca     300
tgggccaaat ggctattgcg atgggaaagt tggccactct cgaaaacttc gttcaccagg     360
ctgacctctt gagacagcag acgctccaac agatgcatcg gatattaacc acccgccaag     420
cagcccgcgc tcttctcgtc atcaatgact acatctcacg tctccgagct ctaagttcat     480
tatggttagc tcgtcctagg actgaaaaca tctgttctgc taaactcttc tgatgtaatc     540
gatagttttg attgaaatta acgtttctag tggggatcca tttactgcga ctgtagcgat     600
tcgggccaca tttatataaa agctat                                           626
```

<210> 299

<211> 438
<212> DNA
<213> Eucalyptus grandis

<400> 299
aaagaagaga ctaatggtcg catctgcatt cggagaggac gagaaagcgg gtcgtcaaac 60
ccgcctaacg gtggaggact tgaactactt gtttatggcg tgattcggaa ggtctaattt 120
tgcggatcgc aacacatcat ttactaacct tagtgctgcc tggtagagtt tgttctgagt 180
agcggcagcg gccttatact tagtgatttc gacagaagcg attggctgga gattgatcaa 240
ctttcctgct tcaccattat ttgttactgt acagcgcgcg acagatagca acatctaaca 300
gtaaagatgc aatttttttt tcccctgaaa atgtaaatga tatagggttt ttgttctatc 360
tctgtgctct cctccattcc ttatttgtat acggagatca caaacttgag gtcagtgaat 420
ttgataatta tgtcttgc 438

<210> 300
<211> 345
<212> DNA
<213> Eucalyptus grandis

<400> 300
ctctcgttcg cgttctccgt ctcatccttc cttttgccgg tgggtttccg gtcgagatag 60
cggagggttc ctgattcaga gggcggcggc ggcagcgacg acgaggagga gctccgacct 120
cgaagcgctt cggtccgatt cctcccttgc ggtcgcgcgt gtctgacgga cgagtcgttt 180
tttggcggga gatgagagat ctgtgcctcg accagagaga aatggcgtcg gggagctcca 240
gggtcgaggc ccgagctgat gcggagatgg cgctctacaa cgagctctgg caagcctgcg 300
ctggtcctct cgtcgccgtc cctcgtcaag gcgagcgtgt cttct 345

<210> 301
<211> 454
<212> DNA
<213> Eucalyptus grandis

<400> 301
catattttca tgctgctacg ccccgtcctt tggcctgcat ccatggccaa tcagccaccc 60
ggtgagcccc aaccaaatcc gccaccgcca ccgccaccag ccccagcgat ccaaatccct 120
gaccaaccac cgcataattc gccttcttct tcttcttctt cttcttcttc ttcttcttca 180
ttggccacca ccggtgatcg gggcggttcc tcgcctagac cgatgctttc tccgagcggg 240
tcgtcgccgc tggctcaatc cacagggagg cacccgcttt accgtggagt ccggtcccgc 300
agcgggaagt gggtctccga gatccgcgag ccccgcaaga ccacccgcat ttggcttggg 360
acatacccga atcccgagat ggccgccgcc gcctttgacg tggccgcgct ggctctgaaa 420
ggctccgacg ccgccctgaa cttcccccat gatg 454

<210> 302
<211> 286
<212> DNA
<213> Eucalyptus grandis

<400> 302
tttcccgcaa gggcacatgg aacagctgga ggcatcgaca aatcaggaac tgaatcagag 60
gattccgctc ttcaacctca cttccaaaat tctttgccag gtcgtgaacg tccagctcct 120
ggcggagcaa gaaacggatg aggtttatgc acagattact ctaattccag cgggaaatct 180
aatggagcct acaagtcccg atccagtctc tgcggaaact ccaagaacaa gagttcatag 240
tttctgcaag gttctaactg cctctgatac cagcacacac ggtggc 286

<210> 303
<211> 513
<212> DNA
<213> Eucalyptus grandis

<400> 303
cagaggacaa ggtaaaaaag gggcagccct ctgctctgtc tgaattgccg tctctcccta 60

cttctctggg cttcttttc tttgcttccc ttccttaaac tctccctctc cccgtttctt 120
gtctggtttt tctgggtgct ctcgcttttc gctgctgaag gagtgagttt gaccgtcggg 180
ttcctttctt gatcctccaa ttcgatcgtc agctcctcgt gtcgactttt ttcgggtttc 240
ctgtcggcac tgttcgattc ggattcctcg acggaatggg gagtaacatc aacttcaaga 300
acttcagcac cgatccgacg ccgacgaata acaggcctcc tggcaacacg ctgttaaccc 360
ggcaaccgtc ggtgtacacg ctgacctttg aggagttcca gaactctata ggcaaggact 420
ttgggtccat gaacatggat gagctcataa agaacatttg gtctgcagag gagaaccaat 480
ctatggcatc tgctagtggc gcttgtggtg gcg 513

<210> 304
<211> 370
<212> DNA
<213> Eucalyptus grandis

<400> 304
ggcgattgca tgcttcccat gtgtagcatg gtgtcagatt tttgaactgt taattgcatg 60
tgccgcaatc ttcattccta tcaattgagc acttcaacag gctttttcta gtgggaagaa 120
gtctccaaca aacatgacat aggggatatt ctggaaatag ttatgaaaga ggagaccccg 180
tttctaataa ggaacttcca tgcaggcatg tggatcgtac gaatattctg agcaatacca 240
tgatgaagtt aagccagcat atggacctca gatatcggca cattctcagt atctcgggta 300
caattccttg agattggggt tgcctctcag agtggcggag gaacctgttt atgtgaatgc 360
caagcagtac 370

<210> 305
<211> 503
<212> DNA
<213> Eucalyptus grandis

<400> 305
gcccgatgtc cccctcccct cccccgccgg agacgtgacc gatgccgagt ggttctacgt 60
catgtccttg acccgctctt tctcggcggg agacggtatt cccgggaagg ccctcagcac 120
ggggtccttg gtctggctga ccggtgctcg cgagcttgag tcgtacaagt gcgaccgggc 180
caaggaggcc gagctccatg gcatccgcac catggtttgc atcccgactg gtgatggagt 240
ccttgaattg ggtcttgcg atgtgatccc tgaaaactgg ggccttgttc aacgagccaa 300
gtctcttttc ggctccgatc tgctccttcc caagcacccg ccaccgccac cacctccgtt 360
ccagctccac catgaccata gcgacatttc tttcgctgac attggaataa ttgcgggcgt 420
tcaagagaat gatttcgctc ctcacgatga ccacgagaag aaggtcaaga agaagcagcc 480
gctggtggaa ggagctggcg gga 503

<210> 306
<211> 377
<212> DNA
<213> Eucalyptus grandis

<400> 306
atgtcgctgg aatgacgcga ggccgtcgtg acggcattct gaagagcgag aagacgcgac 60
atgtcgtcaa gattggcccc atgcatttga agggcgtgtg gatcccttac gagcgggctc 120
tcgagtttgc caaccgggaa aagatcaccg agtatctcta cccgctgttt gtgcatgaca 180
ttggcgcgct gctctatcat ccgagcaacc ccagcggcgc caccagccgt gcgggcaacg 240
cgcagaacac gcttgccgcc atcgatcgtc gcaggaacga ggcgcgcatg gcggcaagca 300
tccaggggca ggcggtgagc ggagtattgg tctctcccgt cgcccagacc gcaggcggcc 360
gacccagcgt cgaccgc 377

<210> 307
<211> 361
<212> DNA
<213> Eucalyptus grandis

<400> 307
aataatctct ctctctatga caatggagtg ggtagtacac cacgccccag gtcaaatgct 60
gaacagttaa ttttccgagc ggcattgcag gatctctctc agccaaaatc agaagaaact 120

ccacctgacg gtgctctggc agtacctctt ttgaggcatc agaaaattgc cttgtcatgg 180
atggtgaaaa aggaaaccgc cataaattgc tgtgggggaa ttcttgcgga tgatcaggga 240
ctagggaaga cagtatcaac tattgctctt atacttaagg aaagacctcc aaccttcaaa 300
caatgtcagg agaatccaaa gcaggagtta caaacttttg atttggatga ggatgaaaat 360
g 361

<210> 308
<211> 357
<212> DNA
<213> Eucalyptus grandis

<400> 308
gccctctacc tctccccctc cctctctccc tctacacctc gctctcgctt catgatctgg 60
gtggacagag ggtgttcccg catagatcca tcactcgctc gtgttacttc ggcgcaaaaa 120
aggctttgtt ttgggacctg ggtttgtgtc gattggtcgt ttttgtgaac tcccgaatag 180
tgatgtcgtt gtcggccaag agcgagtcga ttcaaattcg ggacgtgtgg gatgataacc 240
tcgacgagga attcgcgcga atccgcgaga tcgtcgacga ttatccgtac gtggccatgg 300
acaccgagtt cccgggtatc gtcgtgcgcc ctgtgggcaa cttcaagaac tccagtg 357

<210> 309
<211> 433
<212> DNA
<213> Eucalyptus grandis

<400> 309
ccgcggtctt ctttcttcca aagtaaactc aacttcttcc ttcctcccca ccggcaagaa 60
aagtctcccc gatcctctct cgccattccc ggcctcgccg tccggctgaa ttgtcgacgt 120
tccggctcgc tccggcgccg actggaggcc atggcggatt cggacaacga ctcggggggc 180
cacaacaacg cgaacagcga gtcggcggcg gcgctcgccc gcgagcagga ccggttcctc 240
ccgatcgcga acgtcagccg gatcatgaag aaggcgctcc ccgccaacgc caagatatcc 300
aaggaggcca aggagaccgt gcaggagtgc gtgtcggagt tcataagctt cataacgggg 360
gaggcgtcgg acggcagcag cagcatcggc ggcggcggcg gggcgtcgt gaacagcggc 420
gggggctccg cgg 433

<210> 310
<211> 511
<212> DNA
<213> Eucalyptus grandis

<400> 310
ggaagatcaa tccagatcga tgggagtttg tgaaccaagg ttttcagaaa gggaataagc 60
acttgctgaa gaatataaag aggagatgca aattcagtga gcatagaaaa acatcgagta 120
gtactgtcac ctctgattac cagaaagctg aaaatgaagt ggaactcaac acgcttaaga 180
agggccagga agtgttgaag accagatccc ttaaactaag agaagagcgg aagagctttc 240
agcatgagat tgagcaagtc gcagagcggg ttcgccatgc tgagtgcagg aaccagcaga 300
tattcctctt cctcacaaaa gcagccaaaa gccccaactt tgtccatcat ttaatccaga 360
agaagagcca gaagagagat ttagagactt gtgaatcaag caagaagagc aaattgcttg 420
gttccgatgc tgaagccacc aaattcttga atgaagcaat ggatcacatg attaaaagcc 480
caaacgttga ttgcctgaga atcagtgatg a 511

<210> 311
<211> 799
<212> DNA
<213> Eucalyptus grandis

<400> 311
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aatccgaggg caagtccttc tgaattcgtg atccccttgg ctaagtacaa taaagcattt 120
tatactcaag tttctcttgg catgagattc agaatgatgt ttgagaccga ggagtcggga 180
gtccgaagat acatgggtac aatcactgga attagtgatt tggattctgt gagatggaaa 240
aactcccagt ggcgcaatct ccaggtgggg tgggacgagt cgacagccgg tgaacgacca 300

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agcagagttt caatgtggga aatagagcct gttgtaactc ctttttacat atgtccacct      360
cctttttttc ggcccaagtt tcctaggcaa cctgatgatg agtctgatgt agaaaatgct      420
ttcaagaggg ccatgccttg gcttggagat gagtttggca tcaaggacac gcctaactca      480
atcttccctg gcttgagttt gatgcagtgg atgagcatgc agcagagtaa tccacttcaa      540
gccactcaat ctggacttct acctccaatg ctttcttcca ctggtttaca caataacctt      600
ggcatcgacg acccctccaa attgctaagt ttccaagccc ccacccaagg tcttcaattt      660
aataaaacga atccacaaaa tcaagtcagt caattgctgc aaccgtctat ggcttggtct      720
caacagcacc agcttcagca actgttgcag aatcctctgg gccaccagca gcagcagcag      780
cagcagcagc tgcagcgcc                                                   799
```

<210> 312
<211> 304
<212> DNA
<213> Eucalyptus grandis

<400> 312

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gtaccttcca tgaaaccaga atatccggtt ccaaatggaa ttggagcatc ggactttggg       60
gaatctttca ggttccagaa ggtcttgcaa ggtcaagaaa acttgggttt tggcactcct      120
tacgatggta tcgaaactca aagtcatcgg ctatctgaag tgaggaggca tcatcctgat      180
gattcaggtg gttctgaagc tgctgccacc agaaatggca tcacaaaccc atccgtgaat      240
gctagtgtca cttacaaagg catgggcttt ggcgaatctt tccggtttcg tgaggtcttg      300
caag                                                                   304
```

<210> 313
<211> 427
<212> DNA
<213> Eucalyptus grandis

<400> 313

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ccccctctc cccttctgcc tccgccctcg atccccaaaa ccctcctccg aatcgattcc        60
ggcagccccc tccggccacc gccccctccc gccgcaatgg acgcagcgcc gccgggcggc      120
ggcggaggcg gaggcggccc ggcgccgttc ctcctgaaga cctacgagat ggtggacgac      180
gcggggacgg acgagatcgt ggcgtggagc tccggcaaga cgagcttcgt cgtctggaac      240
ccgcccgagt tcgcccgcct cctgctcccc acctatttca agcacaacaa cttctccagc      300
ttcatccggc agctcaacac ctacggattc cgaaaaattg atcctgagcg atgggagttt      360
gctaatgaag aatttgtgaa ggacaaaaaa catcttctca aaaacatcca ccgtagaaag      420
cccatcc                                                                427
```

<210> 314
<211> 308
<212> DNA
<213> Eucalyptus grandis

<400> 314

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ttcaagatgt aaagggaaag gaagtgggtg tttcagttca gattttggcc caataataac       60
agcagaatgt acgtgttgga gggtgtaact ccttgcatac aatctatgca gttacaagct      120
ggagacactg taacttttag ccgcatggac cctgaagcga aacttataat gggtttccgg      180
aaagcatcaa cctctatgat gcaggacagc caactagctg ctgtttctaa cggtaaccat      240
tcaagtgaag ctttgatttc tggtggtttt gaaaatgtac ctatgataag tgggtattcg      300
agtctcct                                                               308
```

<210> 315
<211> 92
<212> DNA
<213> Eucalyptus grandis

<400> 315

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agaactggaa aggctgaatc agagtgtctt tgtccccgta atagtgggct gctggatgcg       60
ttagttcacg agtcgaagac tatgagcagt gc                                    92
```

<210> 316

<211> 764
<212> DNA
<213> Eucalyptus grandis

<400> 316
agagagacga ccggacggtg gaaaagagag agagagagag agagagagag agagaagatt 60
gcgatgtagc cggcgacgat cctagaatct gaagctgccg agcctaggcc gtcgattttc 120
ttaagcccgt tcttggtgct gctgttgccg ttgctgttgg tggtggtggt gctgctgctg 180
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gctcgtctgc tcccgctgtt cccttcccct ccccgtctcc tgagtagggt tgcggaagtt 300
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gcagattgag gcgtcgatga atcaagtcgc cgatcggcag ataccgtttt acaatcttcc 600
ctcaaagatt ctctgccgtg tcattaatgt tcaattgagg gctgaaccag agaccgatga 660
gctgtttgct caagtgactt tgcttccggt gcctaaccaa gatgagactg ctgtggagaa 720
ggaaactggg atcccctgcc tccaacgacc ccgtgtccat tcct 764

<210> 317
<211> 181
<212> DNA
<213> Eucalyptus grandis

<400> 317
acattcatgg ggatatgcag cctccaacat tcatctcagc aggcggagga ggcgctgtcc 60
caggggctag aacagctcca acagtcactc gtcgacacca ttgccggcgg gcccagcatc 120
gaaggaatgc aacagatggc aatcgccttg ggcaaattaa ccaatctcga aggctttgtt 180
c 181

<210> 318
<211> 420
<212> DNA
<213> Eucalyptus grandis

<400> 318
ctattggtta tcccaagatg ccgttacagg cttcaatttc tacacagtcg gacttccaag 60
ctgatggttc tggtcatggt gtgccaatac cacaaggtgc agatagtgga tcattaggca 120
tttcagcctt acccaccata caaagagatt cgggtgtgca tgttaagcaa acaacaagtg 180
agtcatcgag ggaggattca gatgatgaag aatttgaagg tgacacggga accactgaaa 240
acaaagatcc tgctgaagtc agacgcgcca gaaggatgca gtcaaatcgg gagtcagcta 300
ggcgatccag aagaagaaaa caggagcaca tgagtgaact tgaaaaccag gttgagcaca 360
ctggactact gaagcgtctc actgatatga accaaaagta tgatgtagca tcagttgaca 420

<210> 319
<211> 462
<212> DNA
<213> Eucalyptus grandis

<400> 319
cggaaccggt ggcaattgga tcgctcttcc tcgcaaagcc gggcttaagc gctgcggcaa 60
gagttgcagg ctaaggtggc tgaattacct gaggccagac ataaagcatg gaggtttcac 120
tgaggaggag gatcacgtca tctgcactct tttctttacc ataggaagca ggtggtcggt 180
aattgcttcc aaattgccag gaaggacaga taatgatgtg aagaactact ggaacaccaa 240
gctgaagaag aagctaatga agcaactggc ttctctgaaa acagtgcctg aaagtaactt 300
tgactatcag gtctgcgcac agaactcggc ctcaatcgat cctgagacca agaatcggga 360
atatgctgct aattcaatgg gattccccaa gcagaacttc aatccaggaa tacccacttc 420
gaactcgagt cttctctgtc ctccaagtct cactgaagtt tc 462

<210> 320
<211> 445

<212> DNA
<213> Eucalyptus grandis

<400> 320
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caagcatttt gtcaaagaaa ctcctttgtt ttttctctct ttctctctcg accatggccc 120
gaccgcagca gcgatatcgc ggcgtgcgcc agaggcattg ggctcctgg gtctctgaaa 180
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tcccttacaa cccaaacatg tctcagtctc ttcgtcgaag ctcctctcgg cgacattgac 360
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gcaagaacca cagaaccacc cagtt 445

<210> 321
<211> 350
<212> DNA
<213> Eucalyptus grandis

<400> 321
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ggaggcggag gagctcccca agaccatcgt gcggcgcgtt gtgaaggaga agctctcccg 180
gtgctccgac gacggcgacg tctccctcca caaggacgcc ctcctcgcct tctccgagag 240
cgcccgcatc ttcatccact acctctccgc cacagcgaac gacatatgca aagaatcgaa 300
gaggcaaact atcaacgcgg atgacgtgtt gaaggcgctg gaggagatgg 350

<210> 322
<211> 263
<212> DNA
<213> Eucalyptus grandis

<400> 322
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cactgggtac caattgggtg ggaaaggatc tcggctctcg cccaaactgt gcaagtagat 120
gctggttggg ggatgcagct agattcaatg gatgacgatg aggacctgac tgttgcagat 180
atggagactc cttactggga gaggcctgca gggccgatat ggtggtgtca tttctcggca 240
ggtcatcctg ctgtggaagc atg 263

<210> 323
<211> 893
<212> DNA
<213> Eucalyptus grandis

<400> 323
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agtccgtccc ttcctttgat cactagcaaa tgtacgaccg aggattagca acccaaaagc 180
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aacgcgcaca agagagagag gaccctggca aagcgggcaa tgaggatggg catgttttct 780
tcacagagat attccagctt ggcgtctttg cctttgcacg ggtctcccac tgtcagggat 840
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<210> 324

<211> 434
<212> DNA
<213> Eucalyptus grandis

<400> 324
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cctagctcga gcatcggttc gtggatgtgg aaccctagtg ccgcccagga ggatgatgac 180
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ggccacatga atgtccaccg cagagaccgt gctaagcttc accaatcaca attccggccg 360
ctggcgaacc aaaattctcc tttcgcttct tgctcttccc cgtcctcctc gactctgcta 420
ttcccgaatc aaga 434

<210> 325
<211> 588
<212> DNA
<213> Eucalyptus grandis

<400> 325
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atggctgaat tagattattg ccaaaccaaa agcagccccg gcgctgccgc cacgcgctta 120
aagctcttcg gcttcaacgt ctccgatgag gaagactcag ccgtcagcga ccccattact 180
gttggcgcga acggcggcgg cggcggcgga ggcggcaagg ccacgccgtc gggctcgccg 240
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agggaattcg ccaactcgca ggccctgggg ggccaccaga acgcgcacaa gaaggagagg 360
cagcagctca agcgcgccca gctgcacgcc agccggaacg ccgccgtgtc gtcgctcgtc 420
cggaacccca tcatctcggc cttcgctacg ccgccgcacc tgctggccac cgtggggccg 480
gtggtggtga cgggggcggc gcccacctcc ccgtcctggg tttacgttcc gcgtggcgcc 540
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<210> 326
<211> 417
<212> DNA
<213> Eucalyptus grandis

<400> 326
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cctagagctc gcacttgagc catgttcacc atcctcgtca tcatcaccag catcactcca 120
tcctcttgca gttcctgcaa aagacaacaa gctttactca tgcaacttct gccaaaagaa 180
gttctatagc tcgcaagcac ttgggggtca ccagaatgct cacaagctcg agcgaaccct 240
agcgaagaag agcagggact tgtgctctgc cgcaaaacct cctgcggcga cctcgaatgg 300
tcaccatgta cggccatctt ttcaatctgt ggtttatgag aatcagccac gcttggccag 360
gcatgttggg gatgatatga ggtatgctgg gactaatccg ctgtatggtt catcttg 417

<210> 327
<211> 448
<212> DNA
<213> Eucalyptus grandis

<400> 327
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cgcaagttcg agaagaccat caggtacgcc tcgcggaagg cctacgccga aacccggccc 120
cggatcaagg gcaggttcgc gaagcgcgcc gacatcgagg cggaggccga gcgcatgttc 180
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tgcaaattga agggaaattt gctgaaaa 448

<210> 328

<211> 673
<212> DNA
<213> Eucalyptus grandis

<400> 328
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cgaaggacgc tggaactccc tcgcccgcag cgcaggtttg aaacggaccg gaaagagttg 120
ccggctgcgg tggctgaatt acctccgccc cgacgttcgg cgcgggaaca taaccctcga 180
agagcagctc ttgatcctcg agctccattc ccgctggggc aatcgatggt cgaagatcgc 240
gcaacacttg ccgggcagga ccgacaacga gatcaagaac tactggcgaa cccgggtgca 300
gaagcacgcg aagcagctca aatgtgacgt caacagcaag cagttcaagg acgccatgaa 360
atacctctgg atgccgaggc tggtcgagag gatccaagcc gcctccgcct ctgtctcgac 420
cgctactgtc gccgccgccg ccatggcagc cccacccaca atggccacca ccgcagcatc 480
caacatcggc ggcatggctt tcccgccggc cctggcgggc atgggcggcg acttcagggg 540
cgggcgagtg aatgtggcgc ccagctacag caccccggag aactcctgca cgacggcgtc 600
ttccgactca ttcggtgcgc aggtctcacc cgtctcggac cttaccgacc ttgaccgagt 660
acttacccta tcc 673

<210> 329
<211> 1008
<212> DNA
<213> Eucalyptus grandis

<400> 329
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tcgcgaaatt caccggaatc tctccgaccc atcaacgctc gggaaggaaa ggcgcgacct 120
ttgatccgcc tttttttgt accgtccgat gagtctctgg gcggactacg accacgccgc 180
cgcgaccgac ctctccgcct tctggccgcc gccggccacc ccccctccgc cggcgccggc 240
gccgccgctc agtcaggagt cgctgcagcg gcggctccag gccctgatcg agggggctcg 300
cgggagggac ggggaagaag gggccggggg gcccgccgcg gcgtggacct acaccatctt 360
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gatctgcgat ccgccagtca cgatggagat taacgatcgt cctatgacat ttcagataga 960
gaaccccagc tcgagcagtc ttaccgaaag ccccagcgcg atctgcgc 1008

<210> 330
<211> 384
<212> DNA
<213> Eucalyptus grandis

<400> 330
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aacctctttg ctgtcttcca tggttccgcc attcccgact gcagaactgc ctctcaacga 120
gaatgattcg caagacatgg tcatctacca tgtactgaac gaggccatgt cccagaacaa 180
ctcctccctc ccgcatccga accaatctgg gtccccatcg agcggcggtt ccctcgagcc 240
gtccaggggc atcacgaaga agcactacag aggagtccgg cggcgcccgt gggggaagtt 300
cgcggtgaga ttcgcgactc gttacgccac ggggcccgag tttggctcgg gacattcgag 360
acagccgagg aggcggcgct ggct 384

<210> 331
<211> 420
<212> DNA
<213> Eucalyptus grandis

<400> 331
ctattggtta tcccaagatg ccgttacagg cttcaatttc tacacagtcg gacttccaag 60
ctgatggttc tggtcatggt gtgccaatac cacaaggtgc agatagtgga tcattaggca 120
tttcagcctt acccaccata caaagagatt cgggtgtgca tgttaagcaa acaacaagtg 180
agtcatcgag ggaggattca gatgatgaag aatttgaagg tgacacggga accactgaaa 240
acaaagatcc tgctgaagtc agacgcgcca gaaggatgca gtcaaatcgg gagtcagcta 300
ggcgatccag aagaagaaaa caggagcaca tgagtgaact tgaaaaccag gttgagcaca 360
ctggactact gaagcgtctc actgatatga accaaaagta tgatgtagca tcagttgaca 420

<210> 332
<211> 1439
<212> DNA
<213> Pinus radiata

<400> 332
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tatctatatg cggcagacct tgtttaggca atctattgtt tcgggtataa gtagggaagt 180
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gttctcttaa ttttttcgag ggtcggtttt ttatagtgtt atctacggtt aatatcagcg 420
aagggccttt agatccgaag gtataatggg gcagcaatct ctgatataca gttttgttgc 480
gaggggcacc gtggtgcttg cggagtacac ggaattcaaa ggcaatttta caggtattgc 540
cgctcagtgt ctgcaaaagc ttcccgccag caacaacaag ttcacataca attgcgataa 600
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cgttggaagg caagtaccaa tggcatttct ggagcgtgtt aaggaggatt ttaagaggag 720
atatggtggt ggaagagctg acacagctgt tgctaacagc ttgaacagag attttgggtc 780
aaaattgaaa gagcacatgc agtattgcat tgaccacccct gaagagatca gcaaacttgc 840
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ggctcaagac ttccaaaaga agggaaccga gttgcgcaga aagatgtggt ttcagaacat 1020
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tggggcagag actctgattg cgtacagcaa ctttagtgta ttatatcaag gtcatgcatt 1380
tgttattgtt cttatcttta atgaagtatt gttttacatc ttagaaaaaa aaaaaaaaa 1439

<210> 333
<211> 407
<212> DNA
<213> Pinus radiata

<400> 333
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gacattccta gagaagaaaa aaatcaatat caatggggag ggggaagatt gaaataaaaa 120
tgattgaaaa tacagcaaac aggcaagtca cattctctaa gagaaaagga ggacttctta 180
agaaagctca cgagctctcc gttttatgca atgcagaaat tgctctcatc gtttttttcca 240
acactggcaa actccatgat tggtcaagct ccagcatgaa aaaagttatg gagaagtacc 300
agaaatcgga tcaaggacta ggacttatgg actaccaaca acaacagctg ttgtgtgaaa 360
tgaaacgaat caccaaagaa aatgaaagcc ttcgagctcg tttaagg 407

<210> 334
<211> 307
<212> DNA
<213> Pinus radiata

<400> 334
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tcagatggaa tatgggcggt ggtggacgtc tctcttgaca cgttgcgtgg gaacccgcaa 120
ccccatccca actgccctcc ttcgacttta agatgccgaa gacgaccgtc cggttgcctt 180
atccaggaga tgcccaatgg ctattccaag gttacgtggg ttgaacatgt tgaagtggac 240
gagagggctg tgcaccgtat ttatgataag ttggtaagca ccgtttcgcg ccgaacgcca 300
taccgct 307

<210> 335
<211> 530
<212> DNA
<213> Pinus radiata

<400> 335
ctttccaata ttgagcccaa gcaaatcaaa gtttggtttc agaatcgaag gtgccgagag 60
aagcagagga aggaagcctc gaggcttcag actgttaaca ggaagctgac ggcaatgaac 120
aagttgctca tggaggagaa cgatcgcctt cagaagcaag tttcacagtt ggtgtatgag 180
aatggttaca tgagacagca gctacagaat gcatctgtgg ccgccacaga cacaagctgt 240
gagtctgtgg tgactagtgg tcagcaccaa cataatccaa cacctcagca tcccccaaga 300
gatgctagcc ccgctggact cctgtctata gcagaggaga ccttgacaga gttcctttca 360
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tcgattggta ttgtagctat ttcaaatact tgtaatggag tagctgcacg tgcttgcggt 480
cttgtaggat tagatcctac aaaggttgca gagatcctta aagatcgccc 530

<210> 336
<211> 402
<212> DNA
<213> Pinus radiata

<400> 336
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atcgatcctg accattgcat ttcagatact tgttaacgat ctcccatcgg caaagctgac 120
gctggagtct gttgagactg tcaacaatct catttcatgc actgcacaga gaatcaaagc 180
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atgtcttcaa ttattttttt ttaccaaaac aataaatatt atttatgagt gttgaacaac 300
accattctcg agttttggga ttgtatatta tcagtttgaa agtgtgagtg caatttgata 360
accgactata gggatggaag gaaaactgca tcgaaatcca ca 402

<210> 337
<211> 356
<212> DNA
<213> Pinus radiata

<400> 337
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ttggtcatcg aacgagttcc tataactcgc caagaccagg ttcttcacgg actactaatt 120
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aaagaggata gaaaatgaag tgagcaggaa tgtgagtttt agaaagagac gacgtggatt 240
gctgaagaag gctgcggagt tgtcaatact ttgcgatgca acagtgggcg ttgttgtttt 300
ctctccggcc gggaaacttt ctgaatatgc cagcacttcg gagtcaaatg gatacg 356

<210> 338
<211> 380
<212> DNA
<213> Pinus radiata

<400> 338
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aaagcatttg aacttgctgt tctctgtgat gctgaagttg ctctgataat cttctctgaa 120
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cgaatacaaa cgaaaactgc cggaaacgca atgccttcat cgcttcaaaa aacagagttt 240
gatcaattac aagtcaggat gttgcaggag aagatagaca atttggagaa aacgaaaaag 300
catatggtcg gtgagaattt ggagtcactg acgtggaagg aattgcaaca agtcgaaaag 360

aaattaagca aggctacaaa 380

<210> 339
<211> 299
<212> DNA
<213> Pinus radiata

<400> 339
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ggtggccagg tcatcctccc attagcccat actgtggaac atgaagagtt tttggaggtt 120
atcaagttgg agaatcatgg cctgacacag gaagaagctt tgctatcgag ggatatgttt 180
ctgttgcagc tttgtagtgg gctcgatgaa aatgcagttg ggcctgtgc tgaacttgtc 240
tttgctccaa ttgatgcatc cttagctgac agttctcctt tgctcccttc tggtttcag 299

<210> 340
<211> 584
<212> DNA
<213> Pinus radiata

<400> 340
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ctccctgacc ctgggaggag gaagaagaag aagaacagca ggaggaagcg aaaatttctt 120
aatagtaacc agagaatagc agcgggtgaa gaagcagagg gatcttgcaa tggggcgggg 180
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gacgttggaa agatacgaaa aatgttcata tgcaatgcaa gataccacag gcgtttcgga 420
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gcagcgatca caaaggcatt tgttggggga agatctgggt ccgttaaatg ttaaggagct 540
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<210> 341
<211> 592
<212> DNA
<213> Pinus radiata

<400> 341
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ttgggctgca ctgaaataca ttgaacattg gagttgtcga gcgcgagata tgggtcagca 120
gtccctcatt tacagctttg ttgcaagggg cacggtggtc ttggccgagt acacccaatt 180
cacgggcaat ttcacaacaa ttgccaatca atgccttcag aagattcctg ccagcaataa 240
taagttcacc tacaattgcg atcgtcacac attcaattat ctcgtcgaag atggttacac 300
atactgtgtt gttgcagatg aatcagttgg aagacaacta ccaattgcct ttctggagcg 360
cattaaggat gacttcaaga aacgatatgg tggtggaaaa gctgacacag ctgttgctca 420
cagcctcaac aaagactttg gaccaaaatt gaaagatcat atgcagtatt gtgttgatca 480
cccagaagag attaacaaac ttgcaaaagt gaaggctcag gtttctgaag ttaaaggcgt 540
aatgatggag aatattgaga aggtccttga tcggggtgaa aagatagaac tt 592

<210> 342
<211> 163
<212> DNA
<213> Pinus radiata

<400> 342
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tactttagct tctgctagag acttctggac tctgagatac acaacagtgt tggaatatgg 120
tagtcttgtg gtttgtgaaa ggtccttgag tgggactcag ggt 163

<210> 343
<211> 372
<212> DNA

<213> Pinus radiata

<400> 343
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gcaacagcaa caccaccagc accaccaaca agaagccagc aggatggtga cttccttgga 120
ggtcgatatc gatactgctt gttccagtaa acctaacgat tccattgatg cgctgaaatc 180
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ggttggggct cctccagaag ttgtcacagt actggatgag attattcaag agaatcagct 300
tggacgccat tcgggaacta tggatatagg agtggatccg gagcttgatc aattcatgga 360
ggcctactgc ca 372

<210> 344
<211> 418
<212> DNA
<213> Pinus radiata

<400> 344
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gacagacaga gacgtgatca tggggcgagg gaagattgaa ataaagaaaa tagatgatgt 120
aacgagcaga caggtaactt tctcaaagcg caagatgggg atattcaaga aagcccacga 180
gctgtctgtt ttatgcgatg cagaggtggc tgttctcatc ttttcaaaca ccggaaggct 240
ctacgactat gctagttcaa ggtgtatgga acgaactatt gagagatatg aaaaatgtac 300
caaagcaatt aattgcccaa catcagatcc cattgtcgag aataagagcc caattcagga 360
aggcattgaa atattgaggc agaaacttcg tgcattacaa agattgcaaa gaaatctg 418

<210> 345
<211> 657
<212> DNA
<213> Pinus radiata

<400> 345
ggtacaagaa gtggctcata ttgcaaatgg gtcgcacccg ggaaattgta tttctcttct 60
tcgcgtaaat gcatgtagta caagccaaaa cgtagagcta atactgcagg agagttgcac 120
agatgcatct gggtctgtta tagtgtacgc cccccgtggac gtcccagcaa tcaatattgc 180
tatgagcggg gaggatcctt catacatagc ccttctcccc tctggatttg ccattcttcc 240
agacggtcaa aatagatctt ctactagttc actcctcgaa ggggcgaaca gcagcagcaa 300
cagtagcaac agcagtggat tggatagccc gctcacaaga ggaggttcat tactcactgt 360
ggcctttcag gtgcttgtca gccatttacc aacagccaag ctgggtttag attctgttac 420
aaccatcaat aatctcatat gcaatacagt gcagcagata aaatctgcat tgcactgtgc 480
agatgtctga atcgcagtgt aattatcgga gtacgggtgg agggggcggc atgcagagaa 540
acaacataaa aaacgttcta tccggtactt gcacccccaa gggtagtaga ataaaaaatg 600
atatgcatat atatgtttgg tggttgcttt ctgtagtttt atctgctgca gttaagt 657

<210> 346
<211> 377
<212> DNA
<213> Pinus radiata

<400> 346
aaccggagag caagaacaaa gtggaaacgc aacgaagtgg agtgcgataa tctgaaacgg 60
tgttgcgaga gtctgaggga ggagaacaga agattggaga aagaagtgca gtcgctgaga 120
gccatgaaag tcccgcagtc acccaattcg atgcctctgg cagccgccac cctcgcaatg 180
tgtccggcct gcgagggcct tgcaatcaag aaccgcggcg ccgccacttc ctccaccgcg 240
aagtcacaac aatccctcct tacaattatg gggattgggg atgtaaatat gatatccaaa 300
aataaccaaa ccccttcaat gggaatggga gatgaaatga attgaagaaa gtgaacttaa 360
aaaaaaaaaa aaaaaaa 377

<210> 347
<211> 558
<212> DNA
<213> Pinus radiata

<400> 347
gaaagaagga aagaatgggg cgagggcgcg tcgagctgaa gcggatcgag aataagatta 60
accgtcaggt cacgttttcg aaacgccgga atggtctgct gaaaaaggcg tatgaacttt 120
cagtgttatg tgatgcagag gtagcacttg ataatattct caagcagagg aaaactctat 180
gagttcggaa gcgccgggat gctcaagact ctggagcgat atcaaaaatg ttcatacgta 240
ttgcaagacg cgactgtatc ggaccgggag gcgcagaatt ggcatcaaga ggttggcaaa 300
ttaaaagcca aagttgaact tttacaacga tcacaaaggc acttattagg tgaagacctg 360
ggccccttga gtattaagga gctgcaacaa ctggaacgtc aacttgaggt tgcactgaca 420
catgttaggt caagaaagac tcaagtcatg ttggaaatga tggatgaact acgcagaaag 480
gagcgaattt tacaagaagt aaacaaatct ctgcgcaaga agttgcagga ggccgaggga 540
caggcattca atgccatg 558

<210> 348
<211> 331
<212> DNA
<213> Pinus radiata

<400> 348
ctcagataca gctaatagca gtgagcttct gggcagcagc agatcagatg gagatcaccc 60
acatcatggc caccatgatc agcagcagca gcagcaggag aatcatatgg tgtggcagaa 120
ttcaaggctc aaggcagatg ttctccaaca tccactgtat gaccagttgt tggctgctca 180
tgttgcctgc ttgaggattg caactcctgt ggatcagctt ccaaaaatag atgctcagtt 240
ggctcagcag caccatgttg tggccaagta ctcagtccta ggaaggaacc agctcttgac 300
tggagaggag aaggaggagc ttgacaggtt c 331

<210> 349
<211> 260
<212> DNA
<213> Pinus radiata

<400> 349
acgaaattac cttggggagt atactggaga gttgatttca catcgggaag ctgataagcg 60
aggaaagatt tatgatcgag aagactcctc cttccttttc aacttgaacg atcagtatgt 120
tcttgatgca taccggaagg gggataagtt gaaatttgca aatcattcac caactccaaa 180
ttgctatgca aaggtgatta tggttgctgg tgatcataga gtgggtattt ttgcaaagga 240
acgcattgca gccggtgagg 260

<210> 350
<211> 479
<212> DNA
<213> Pinus radiata

<400> 350
aaaatttaac agaaacattg caagctgctt gtttaatttc tgtgcttcaa gggaaaggag 60
aggaagagat tcccagagga gaagatcaag ataaatgggg agggggaaga ttgaaataaa 120
aatgattgag aacgcaacaa acaggcaagt caccttctct aagagaagag ggggacttaa 180
aaagaaagct caggagctct ccgtcttatg caatgcagaa gttgctctca tcatttttc 240
cagcaccggc aaactccatg agtggtcaag ctcgagctca ttctttatgt tacaaaaaag 300
catgaagaaa attctcgaga gataccagaa atcagagcag ggactaggac tcatggatta 360
tcaacatcaa cagctgttgt gtgaaatgag acgaatcacc aaagaaaatg aaagccttca 420
agagcgttta aggcatatga atggcgagga agtcaattca ttgaagctcc cagagcttt 479

<210> 351
<211> 260
<212> DNA
<213> Pinus radiata

<400> 351
gctatttgca gcatttcctt ccatccgtac ccaaaagatg ctgacaaaca tttactagca 60
agacagactg gactgaccag aagccaggtt tcaaattggt ttataaatgc acgtgtccgc 120

ctttggaaac ccatggtgga agaaatgtat atggaggaac ttagagaggc cgaaacacag 180
aatcatgcag cagattcgaa ggtaacaaca gaaagtggtc aaaacaatga agaaacggtg 240
tcaaaggaag gagctgggaa 260

<210> 352
<211> 176
<212> DNA
<213> Pinus radiata

<400> 352
agggggctgg ttacagctct gtgagcggaa tagatgaaca tgcagctgga ttctgttctc 60
aacttgtgtt tgcaccaatt gatgcatctt ttgctgatga tgctcctctg gctgccctct 120
ggtttccgag taattcctct agaatctgga tcagaatgtt tctcctccaa aacgga 176

<210> 353
<211> 338
<212> DNA
<213> Pinus radiata

<400> 353
ggacggagga ggacgaggag ctggtcattt cgtcatggaa cagtttatac ctgagcaggc 60
cgtcatctct gattcgtcca tatcttcggt gaaaacagaa gtttgcagcg gtagtggagg 120
ccaatttgag ctgatccgca ggaaagaaga ggggagatgc ggccgtgcct atgctgagcc 180
ttcatttgtt gtcactcctc tagttacttc attacctcca cagcagcagg aaggccggat 240
ggtaacatcc ctggcagtgg atatggacag ctcatgttct tgtaaaccaa atgaagctga 300
tgccatgaga gcaaaattat ttgcgcatgt acactatc 338

<210> 354
<211> 405
<212> DNA
<213> Pinus radiata

<400> 354
gggcaagggg aaagacacag atgagaaaga tcgagagcgc gaccagcagg caggttacgt 60
tttctaagcg cagaaatgga ttgatgaaga aagcttacga gctgtcggtg ctctgcgatg 120
cccaactggg actgattgtt ttctccccca gagggaaggt ctatgaattc tccagtacct 180
gcatgcagaa aatgttggca cgatacgaaa aatgttcaga aggaagtgac acgagtacat 240
caaaagagca agatgtccag tgtttaaaac gagaaagtgc gaatatggaa gaaaggattg 300
aaattcttga atccatgcaa agaaagatgt tgggcgagga gctggcatca tgtgcattga 360
aggatttgaa tcagttggag agccaggttg aacgaggttt gagaa 405

<210> 355
<211> 332
<212> DNA
<213> Pinus radiata

<400> 355
tctctctggt gtggggagca ctcaaaatgg ggaagacgaa gatggagatt aaacgcattc 60
aaaaccctag ccgccgccag gttactttct cgaaacgcaa gaacggattg ctaaaaaagg 120
cattcgagct ttctgttctc tgcgatgctg aagtcgccct gatcattttc tcggaaactg 180
gcaagatctg cgagtttgca agccacgacg acatggcaac aatactggaa aaatatcgaa 240
tatacacgga aacacatgga aacatggagt cctcgtcggt ccaaagcgtg aagattggtg 300
aatcacaact caaagcgttg cgtgagaaga tg 332

<210> 356
<211> 405
<212> DNA
<213> Pinus radiata

<400> 356
aaactcccca aggaagcaag gcaaaagttg ttggattggt ggaccagaaa ctataagtgg 60

ccatatcctt cggaaagtca aaagatagca ttggcagaat ctaccgggct ggatcagaag 120
caaataaata actggtttat aaatcagcgc aagcgacatt ggaaaccatc tgaagagatg 180
cagttcgtgg ttatggatag tcctaatcct cacaacgctg ctttttcct ggagggacat 240
ctcaggacag atggaactgc cttttcaatg gattgttgaa gttaaaccca tttttgaggc 300
aaacaccagt tttagtgcaa tgctgtagat ttgtctgact catcttttat atgtatagct 360
ggatctctaa aatgggccat gtttcataac gtgctagata tgagt 405

<210> 357
<211> 468
<212> DNA
<213> Pinus radiata

<400> 357
acttttcatg cgtttcgaag gccgccatga ttctggcaga gcacagcgaa ggcgatgcag 60
agctggagga agtagcaggg gaatgtttag agagggttcc gcctttacac agccgattca 120
cgcataccac aaaaagaaaa atgtacagtt ttctaatgga cggcccattt gtttactgtg 180
ccatagtgga tgaagcgctc gggaaaccgc aggtctttgt atttctcgag catgtcagag 240
atgagttcaa gaaattgttg aagaacagag gttgtgaagg gctcagttcg tgctgttttg 300
ataaagaatt cggtcctgtt tacaagcgcc ttgtggctcc tcttgtgggt gttcctcaaa 360
tagaaaagga tcgcttgatg gaggaagaat cgaaatccca acctgctaaa acacatccag 420
tccaggtaaa taattctccc aaagattctc tacctgtgta tgataata 468

<210> 358
<211> 499
<212> DNA
<213> Pinus radiata

<400> 358
aagatgggag cttggtgatc tgtgaaagat ctctctctgc ggctcaaggt atgcctatgg 60
tatcacagtc tcaaagcttt gtgcatggtg aactcttatc tagtgggtat ttgatccgac 120
cctgtgaagg cagaggagca ttagtcatca tggttgatca caggaactta gaggcttcaa 180
gtgtccctga agcacttcgt cccttatatg agtcatctac attctttgca cagaagatga 240
cagttgaggc ttcttatcat cttcaaggta aagttcaacc ggaaatgatt tccttatcaa 300
aaaaactcca acagccatgt aatgtacggt catacagtca acggctttgc agaggcttta 360
atgaggcagt caacacatta cctgatgatg gctggatgtc attgtccaaa gatgggctgg 420
gggatgtcac tatttgtgaa agctttgtca aattgccgga accaaatgca tcgcaaatag 480
cctatgtcaa cagcatggg 499

<210> 359
<211> 462
<212> DNA
<213> Pinus radiata

<400> 359
acgggctctc caacaattag gcatgattca gcagcatgct tggaggccac agagaggact 60
tcccgagcga tctgtttctg tcttacgggc ttggctattt gaacattttc ttcatccgta 120
tccaaaagat gcagacaaac atatgctcgc gagacagact gggcttacca gaaatcaggt 180
ctcaaattgg tttataaatg cacgtgtacg cctctggaag cctatggtgg aagagatgta 240
tgtggaggaa acaaaggagg cagaagtaga ccatggatca aatgataaaa caggtaagga 300
gagtggcgag aaaaaagaag atgcattgtc aaaggaagga gctgcaggca ataatgggaa 360
tatacatgag cagcaaagtg ggaaaatctc aaaactcgac aatattgcac aggatggagg 420
tgctgatgaa aaacctgctg gtgtgcccaa atctgaaaat gc 462

<210> 360
<211> 357
<212> DNA
<213> Pinus radiata

<400> 360
ggagtgttga aattcccctg ttttgatctg ataactatga atctgatgga gtcttttgag 60
gcaaagggaa agggagagaa gaggagaacg gtgaggggga aaacccagtt gaagagaatt 120

gagaacggga ccagcaggca ggttactttt tgtaagcgca ggaatggtct gctgaagaaa 180
gcgtacgagc tgtcagtgct ttgtgatgcc gaagtggcac ttattgtttt ctccccaaga 240
gggaagctgt atgagttcgc taatcccagc atgcagaaaa tgttggaacg atacgaaaaa 300
tgttcagaag gaagtaaccc gacgagtaca gcaaaagagc aagacgtcca gtgttta 357

<210> 361
<211> 749
<212> DNA
<213> Pinus radiata

<400> 361
gagcttcatc cgccattatt gggtttcaat tcgatcttga tttgccagag acgatgtgaa 60
ttaccattct gtgggcaaaa gcgagagagg aggagaatgg tgaggggaaa gacccagatg 120
aaaaggatcg agaacgacac gagcaggcag gttacgtttt ctaagcgcag gaatgggtta 180
ctgaagaaag cttatgagct ctctgtgctc tgcgatgccg aagtgggact tataattttc 240
tcaccaagag ggaaactata tgaattcgcc agtcccagca tggaggagat tttggaaaag 300
tataaaaaac gttcgaagga aaatggcatg gctcagacaa cgaaagagca agatactcag 360
tattccaaac attccaaaca aaagctcgca aatatggaag aacagattag gattcttgaa 420
tcaacccaaa gaaagatgtt gggggaaggg ttggaatcgt gttcaatggc agaattaaat 480
aagttagaga gccaagctga acgaggattg agccatatac gggctcgaaa gacggaaata 540
ttggttgacc aaatagaatg tcttaaaagg aaggaacgtc tcttaagcga ggagaacgcc 600
ttactcagta gaaagtgggt tgatcgtcaa tccgtggacg gttccggttc aacatcatct 660
tcaattggat tgggaagcat cgagcagatc gaagttgaga cacaactggt tataagaccg 720
ccaaatgcac aggatcactg ttctgtaaa 749

<210> 362
<211> 670
<212> DNA
<213> Pinus radiata

<400> 362
gtttgcttgc cgtgaaagaa atcgaacttc cggcgcttgg gtgcgagaaa tatttgcaaa 60
tcgaacttcc ggcttgggtg caagaagctt ttgcgttttc ggtttcagat taaagcaata 120
tggagtcaga ggaagacaaa atatctccag agaacaagaa aaggagatta aaaaccccac 180
agcaggtcga aggtctagag agcttttatg ctgaacataa gtatccttcg gaagctatga 240
aatcacagtt atcagaagaa ctgggattaa cagagaagca ggtacaagga tggttctgtc 300
acaggaggct taaggataaa aggctcatga aggaagaagc ttccaacaat ggaaaacaag 360
atccacacaa tggcataatg caagattctg ttaatggagt caaacaagat tctagcggca 420
gtggaaaaaa atctgatcac caacgccatt cgaggtgcaa agaggttgaa agtcaacgat 480
ttgcgaatgc catggattat cctgcagctg tccttgcgtc agagcttagg gatcatgatt 540
tgttcaaagt aaaccatgat aacgaagaca cctttgcagg aagtagttca gcttcacaag 600
acagatcgtc attacaaagt gggaatcctt atgaagctga ggcaagaaga cgcccatttc 660
agaatggtaa 670

<210> 363
<211> 651
<212> DNA
<213> Pinus radiata

<400> 363
tagacctaat tctgaggtca atgaatctct gctgaaaaca ctttggcacc actctgatgc 60
catcatgtgt tgctccttga aggtaaacat gtacaatatc atagactttc ttctggagat 120
taatttcaag tttgcacaat tcttacgtta ggctttgttt ggtgctgtgc agtcattgcc 180
tgttttcacc tttgcgaatc aggcaggcct tgatatgtta gaaacaaccc tggttgcctt 240
gcaagatata tcattagaaa agatacttga cgacaatggc cgcaaaagct tttgctcaga 300
tattgctcaa attatgcaac agggatacgc ctatctacct gctggagtgt gtgtttccag 360
catgggcagg cctgcttcct atgacagggc tattgcttgg aaggtcctca atgatgagga 420
aaatccccat tgcatagcat tcatgtttat gaattggtcc tttgtttgac cattattttt 480
cattgtacaa attataccga gtccttgaag ttaacttatt gaacaaaatc tctttctggt 540
caagccttgt gtgactggcc aaagaaaaaa tacagaggga gagcatgtaa gcagcatatt 600
tggttgctac atttttgctt ttaatttgaa aaatgaattc tgttggacaa g 651

<210> 364
<211> 257
<212> DNA
<213> Pinus radiata

<400> 364
ccaaagaatt tggcacgagc ccgccagcaa caacaagttc acatacaatt gcgataatca 60
taccttcaac taccttgttg aagatggctt cgcatattgt gttgttgcag atgaatccgt 120
tggaaggcaa gtaccaatgg catttctgga gcgtgttaag gaggatttta agaggagata 180
tggtggtgga agagctgaca cagctgttgc taacagcttg aacagagatt ttgggtcaaa 240
attgaaagag cacatgc 257

<210> 365
<211> 357
<212> DNA
<213> Pinus radiata

<400> 365
gtgaattcca accaaagtaa tatgcttata cttcaggaga gctgcacaga tgcatctggg 60
tcgttcgtaa tttatgctcc agtggatata gttgccatga atgttgtgct cagtggaggt 120
gatccagatt atgtggctct tctgccatct gggtttgcaa ttttaccaga tgggccaaag 180
tgcatggcag tcaccaattc aggcattaac gacctaggca gtggaggatc tttactcact 240
gtggcttttc aaattttggt tgactctgtg ccaacggcta aattatccct ggggtctgtt 300
gcaacagtga atagtctcat ttcatgcact gtggacagga ttaaagctgc tgttact 357

<210> 366
<211> 309
<212> DNA
<213> Pinus radiata

<400> 366
attcactggt attttagcag cttttgtttc atctaaggtc acagagcatc agccccctgg 60
tcacatgcct tcggtcacac agggctccgc catggccaac cccaatttcg tggctttgca 120
taataatcag ggtcatgacg gaggagcaaa tggagaccct gcgcaggcaa atttgcgttt 180
attcaacaat tggcagtcag ttggtagaaa tgcacagagc catgtcacag cagcaggcct 240
tcttcagtgg ccgactctgc ttatgggaca acacatgctt tatgatctag ctcaaggaaa 300
tccagggtt 309

<210> 367
<211> 575
<212> DNA
<213> Pinus radiata

<400> 367
ggaaggaaag aatggggcga gggcgcgtcg agctgaagcg gatcgagaat aagattaacc 60
gtcaggtcac gttttcgaaa cgccggaatg gtctgctgaa aaaggcgtat gaactttcag 120
tgttatgtga tgcagaggta gcactgataa tattctcaag cagaggaaaa ctctatgagt 180
tcggaagcgc cgggtatggt attgaaatct ctggactttt ttctgggatt ttgtattata 240
atattagagt tggagaaggc tgtgagggag agaagagagg ttgtaaagtt tattccgtga 300
tttgttttaa aggaaaatct taaattagct aaaacttttg tgcacgttca aaaggccttt 360
aaattttctc tccagttgag agtattttga gaaaataagc cgaatgcgcc cgggagccac 420
acaattgtag caagcttcag tttattttca aagcatttct ccgaataagc tagaaatgct 480
aagaattttg tgaatcgcta aagcatttgt aacatatagc gcagatatca aaaaaataaa 540
gaatttatcg gtaaaaaaaa aaaaaaaaaa aaaaa 575

<210> 368
<211> 243
<212> DNA
<213> Pinus radiata

<400> 368
ctgagagtta agtgattgtt gggagggaaa agagaaaaaa gaggagatca agaatggtga 60
ggggaaaaat ccagatgaag aggattgaga atacggccag caggcaggtt acattttcca 120
agcgtagaaa tggattgctg aagaaagctt acgagctctc ggttctctgc gatgcagaag 180
ttggacttat gatttctcg ccaggaggaa agctctatga attcgccaat accagcatgg 240
aga 243

<210> 369
<211> 184
<212> DNA
<213> Pinus radiata

<400> 369
ctatgctatt acagaatgtg cctccagcac tacttgtccg cttcttgcgg gaacatcgct 60
cagagtgggc tgattgtaac attgatgctt attcttcagc taccatgaaa gcaaatgctt 120
acaatgttcc aggttcactg ggaggcatta cagggagtca agttatcctt ccactggcac 180
atac 184

<210> 370
<211> 158
<212> DNA
<213> Pinus radiata

<400> 370
acatcccgtc ttcactttgt tgatcaacaa ttacgacaac agcgagctct tcagcagcta 60
ggaatgatac agcagcatgc ctggagacca caaagagggc ttccagagag ggccgtttct 120
attctccggg cttggctatt tgagcatttc cttcatcc 158

<210> 371
<211> 462
<212> DNA
<213> Pinus radiata

<400> 371
gcagtggtca tatggatggg ggatccggag aggaccaaga tgccgccgat caagatcacg 60
atcacgatca cgatcatgat cacgagcagc agcagacgcg gaggaaacgt taccacagac 120
acactgctcg tcaaattcag gagatggaag cgttgtttaa ggagtgtcca catcctgatg 180
acaaacaaag gcagcggctc agcattgaat tgggccctta agccgcggca ggtgaaattc 240
tggtttcaaa atcggcgtac tcagatgaag gctcaacagg atcgctcaga caacgccatt 300
ctccgtgcag agaatgaaaa tctgcggaac gagaacgtag cactccgaga agcaattaaa 360
aatggtgctt gtccaaactg cggagggtct acatcgctgg gagagatgcc tggattcgac 420
gaacaccatt tccgtataga gaatacgcgc ttaaaggagg ag 462

<210> 372
<211> 510
<212> DNA
<213> Pinus radiata

<400> 372
gcaaccggag ctttaagact agaatatata tgtagccctc gggctctgac gaatactgaa 60
actagagata cccacctctt atctggtgtg taaggcacgc aaaatgggaa agaagaaggt 120
ggaggtgaaa ctcattcaaa accctaccag tcgccaagga tgtttctaca accgcaagtg 180
cggtttgctt aaaaaagcgt ttgagctttc tgttctctgt gatgctgaag ttgcccttat 240
aatcttctcc caaaccggca agatttacga gtttgcaagc catgacgacg tcaacgcaat 300
tctcgcaaaa taccggatac aaacgggaac aacaacaaac gcgatgcctt cctcgcttca 360
aaacaccgag ccggagacgt tgcatgagga gacaaatatg ttgggaaaaa ggaaaaaagt 420
ggagaagttg catgagaaga tcaatatgtt ggaaaaaaga ggaaaaaaca tggtttggtg 480
aaaatttgga gtcattaacg gtcaatgaat 510

<210> 373
<211> 466

<212> DNA
<213> Pinus radiata

<400> 373
tggatcacca tgcagtagag gatagggagt taaaaaatca tctccttcgc aaatacagtg 60
gatatttgag tagtctaaaa caggaattca tgaagaagaa aaagaaagga aagctcccta 120
aagatgcacg gcaaaagtta cttgattggt ggagtctgca cgacaagtgg ccttatcctt 180
cggaaacgga gaaaatagct ttggctgaat gcacggggtt ggatcaaaaa caaataaata 240
attggtttat aaaccaaaga aaacgccact ggaagccttc tgaagatatg cacttcatgg 300
taatgaacag tcacagtcct cacagtgctg ccttgtatgt tgagagacat atgatgactg 360
aagggtatct ttagattgct agaaagaacc ttcggctgaa aacagcacac aatgctattg 420
cttttgttgt atttaattgg catggctttc aattttaaaa aaaaaa 466

<210> 374
<211> 573
<212> DNA
<213> Pinus radiata

<400> 374
atctctgttg ggatctagaa ttgagaaagg gacgcttgtg ggctggtggg tttccacaat 60
gagaggctcc tcccgtgcat atgatgcatt ttattctatt tgttgatcct gtcaatggaa 120
aaaaagagag cagtcgaatt tggcattgaa atacatgatc agcaagagat tgaaacgtag 180
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ccgagtacgg agacgtcggc gtcagctcaa tgatggcgct gatgacccaa cacgagcctc 480
atgaaagcga gagcacaatg acgacgagta tgcctagttc attttcatcg ttccatggcc 540
atgctgaatg ccttctctca gcagcaatgt tcc 573

<210> 375
<211> 526
<212> DNA
<213> Pinus radiata

<400> 375
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ggaaggaacc tcggctattc tgtaagttca ctcagatttt gagaaactct tgggattttg 180
ctcaaaatgg ggcgtggtaa aatagagatc aagaagatcg agaacagcgt gcacaggcag 240
gtgaccttct gcaagcgccg aggcggtctg atgaagaaag cctacgagct ttcagtgctg 300
tgcgatgcag atgtagcgct cattgttttc tcgagccgag gaaagttgta cgagctgggc 360
accagcaaca acaacaacaa cagtatgagg tcaatattgg aaagatatca aaagtgttca 420
cagacggcaa aacatatgaa cttttcgaat aatacttcag acgagaaaat gaagcaagaa 480
ataaatttac ttaaacacaa attgatcagc taaacttact aacaga 526

<210> 376
<211> 335
<212> DNA
<213> Pinus radiata

<400> 376
aaaatggcgg cttagatgaa ttacgagcag agactcatcg cagcggcacg gctagctgac 60
aacctgaact ccacgactgc aaaagaattt gatattccca gcgctgaaga agttgccgag 120
aaatgttcag aatggggagt caccgcacag ctgaaggcac accaggccca aggactgtca 180
tggctgatac gccgatatgc cattggcgtc aatgttatac ttggggacga gatgggactt 240
gggaaaacat tgcaggctat aagtttgttg gcttacttga aagatcgacg gaaatgccca 300
gggccatttt tggtattgtg tccattaagc gtaat 335

<210> 377
<211> 773

<212> DNA
<213> Pinus radiata

<400> 377
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acacttctgt attggaagat ggtagtcttg tggtttgcga gagatccttg agtggaactc 180
agggaggtcc cagcatgccc gcggtgcagc agtttgttag agcagaaatg caacccagtg 240
gatatttgat tcggccatgc gaaggtggag gttctctaat tcatattgtt gaccatatgg 300
atttggagcc atggagtgtt cctgaagtgc tacgtccact gtatgaatca tccactgtac 360
ttgcccaaaa ggttacaatg tcggccttac gccatttgcg tcaaatagca caagaggcat 420
cttctgatgt ggtccttggc tggggaagac aacccgctgc attacggaca tttagccaga 480
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tcggtcaaca gtttgcttct tccgatgggc ttcctgctct tggtgggggc atcctatgtg 660
ccaaggcttc tatgctatta cagaatgttc ctccagcatt gcttgttcgt ttcttgcgag 720
aacatcgatc agaatgggca gatagtaata ttgatgccta ttcagcagcc tct 773

<210> 378
<211> 407
<212> DNA
<213> Pinus radiata

<400> 378
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ttggatgcta tctctgaggg ttctatacag aatcattggt catggtcaga agtcaagcaa 120
ttgtctgtaa ctcttcttcg tgctctagat gcgggaattg aacactctct ccttggttct 180
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gcacacgtgc cagatctgca tatcatgtgg cttcttcatt tatgtgatgc tcatcaagag 300
atgcagtctt gggcagaagc tgcgcaatgc gcagtggctg ttgctggggt cataatgcag 360
gcattggtag gaagaaatga tgctgtctgg ggaaaggagc atgtaac 407

<210> 379
<211> 385
<212> DNA
<213> Pinus radiata

<400> 379
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aagagacgga acggactgat gaaaaaggcg gcggagctgt caatactgtg cgacgctgaa 120
gtggccttaa tcgtcttctc caacaaagac aaactgtacg agttcgccag ttccagtatg 180
accaagattt tggaaagata tcggaagcgt tcaaatttaa tacaagatat cggtaaagat 240
ccacagaatt cagacattga gttgacgcgt ctaaaagaag aggttgaccg cttacaaaga 300
tccagaaggc atcttttggg tgaagacctt catcaactag gtgctacgga tctgcaacac 360
ttagaacaac agcttgaaga agcgt 385

<210> 380
<211> 513
<212> DNA
<213> Pinus radiata

<400> 380
tttcaatgcc cctctttttc cagtggacga gtgttcaatt ttccctgtgt tgatctgata 60
cctataaatc tgatggattc ttttgaggca aagggaaagg gagagaagag gagaacggtg 120
aggggaaaaa cccagatgaa gaggattgag aacgcgacca gcaggcaggt tactttttct 180
aaacgtagga acggtctcct gaagaaagct tacgagctct cggtgctttg tgatgccgaa 240
gtggcactta tggttttctc cccaagaggg aagctctatg agttcgccaa tcccagcatg 300
cagaaaatgt tggaacgata cgagaagtgt tcggaaggaa gtaaaacaac aagtatagca 360
aaagaggaag atcccaaggc tttaaaacga gaaattgcga atatggaaga aaggattgag 420
attcttgaac gcacgcaaag aaagatgttg ggcgaggaac tggcatcatg tgcattgaag 480
gatttaaatc agttggagag ccaggttgaa cga 513

<210> 381
<211> 210
<212> DNA
<213> Pinus radiata

<400> 381
cacagttctg gaacctgtta aagagaaatc agtcgaggtc aaactccttc tgtttgcacg 60
aggatgccca gcattatgga gaagcaaaat agtggtgaag atagtgatag caagggtcag 120
cttgataatg gcaagtatgt ccgttacacc aatgagcagg tggagacttt agaacgtgct 180
tataatgaat gctcaaagcc cagcacaagc 210

<210> 382
<211> 380
<212> DNA
<213> Pinus radiata

<400> 382
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acagtctgtt ttgccaggcc ggtgaaaatg ggtgcattcg cccttctatc aagctggatt 120
gatgctgcca ctaatcccaa gtacaggaag aagcgtaaac aatttcagac cgtggagttg 180
agagttcgaa tggactgtga aggctgtgag agaaaagtga gaaacgcact aaattcaatg 240
aaaggagtaa gttctgtaga agtggagaga aaacagtata aggcaacggt gacgggatac 300
gtggatgcca acaaagtgct gaagagagtg aggcaaacag ggaaaaaggc agaattgtgg 360
ccttacaagc cttaccatct 380

<210> 383
<211> 407
<212> DNA
<213> Pinus radiata

<400> 383
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cttgattcca gttctactgg agcaccaggg ctctcaaatg ttctgatagg ctccaagtat 120
cttaaagcag cacagcaatt gctcgacgaa gttgtcaatg taggtaaggg catcaagcct 180
gattcagcca aacatcagaa atcacaatca tggattggaa caacagctaa taaagagaat 240
agtggagctg aaggtggtgg gaaggatgga gcagctgctg cccctacatg gcgttcaact 300
tcagcccaag aaacaaatga ccgtccctct gagctgtcac cagcagaaag acaagagctt 360
cagatgaaaa aagcaaagct tgtggccatg ttggatgagg ttgatca 407

<210> 384
<211> 441
<212> DNA
<213> Pinus radiata

<400> 384
ggcaagaata gttgcctgat agcacggaat ttattaagtg gccttagaac gtgttcagag 60
atcgctgaat acatgtccca caatgtatct gcaatacagc atggagttgg ggatgtatca 120
acactccact ctgatggtag caggaagact gattgtggtg atattctgaa gttcggacaa 180
gagcaagatt ttggcgtaga aaagggagag tgcggaggtt taagtacaca tgcaagtctg 240
ctggtcatcc atcaatcagg aaaagaatta aagatggaaa aggacagcca tgtagacaat 300
atacaccatg tggttgtcaa ctgacatgtg gaaagcaatg cccttgcctc cgaaatggga 360
cttgctgtga aaaatattgt gggtgctcaa agagttgcaa gaaccgtttc agaggttgtc 420
attgtgctaa gagtcaatgc c 441

<210> 385
<211> 423
<212> DNA
<213> Pinus radiata

<400> 385

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agaatacatg cgccaattcc cttccacaat tacgccaaag cctataggcc ttgccactga 120
ggcgactaga gaaactggca tggtgatcac aaacagcttg aatcttgttg aaacactcat 180
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tgtaatatcg agcggaatgg gcgggacaag gaacggtgca ctgcaactga tgtatgcaga 300
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catcgatttt ccacccgggt ggggtaccag gtaagtgtac ccaattcgcc ctatagtgag 420
tcg 423

<210> 386
<211> 445
<212> DNA
<213> Pinus radiata

<400> 386
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tgccgattgc cttctctcag cagcaatgtt tcagggttct caaggagatc ataagctcaa 120
tccacagcct gggatgaacc agcagctagt ctctgagcag tctatcatgt cagattcgtc 180
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cacatcgtta gcctcgcagg ctcgaggaga agcgcggatg ataccgtcct tggatgccaa 360
cagtgctcat ttcaatgtgg ataacgagga gcatgcaata aaatcgaaaa tcttagcgca 420
cccacagtat ccgagcttgt tggga 445

<210> 387
<211> 343
<212> DNA
<213> Pinus radiata

<400> 387
gaactagtca atcagagatg ccatgagaaa tcccatctgc acaaactgtg gaggacctgc 60
tgttcttggc gagatgtcct ttgaagagca gcaacttcgc attgagaatg cccgcttaaa 120
agaagagctg gatcgattgt gtgcactagc agggaagttc tttggcagac ccattccttc 180
aatgccatct gttcccctta tgcctaaatc atccctagac cttggagtcg gtggcatgcc 240
cacttcgttg ccctcggcta gtgcagactt gatgcatgga cctgctggtg gtcgaacagg 300
aaacataata ggtattgaga ggtcgatgct ggctgagctt gct 343

<210> 388
<211> 1193
<212> DNA
<213> Pinus radiata

<400> 388
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ctcgccacgc caccgcgttc gcctgttctt cctcctctgg atcaacccat tcccacagtc 120
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ggagtttttc tctgaggaga tgatgatgtc tggtgggaga atgtatggtg ggccgaacgt 480
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tgattgtatc catccaccgg agaagaagag aaggctgact gctgaccaag tgcagttcct 720
ggaacgaagc tttgagatcg aaaacaagtt ggaacctgag cgcaagatac agctagccaa 780
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caagaaagtc tatccccagc ctgcctccca ctctgactgt gttggggagc ctgaaagaag 1080

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tactgctgcc aaggatacac caccaggttg taaacacgaa gatcttctga gctctggaac    1140
agatagcagt ggggtcctgg atgaagatag tcctcaccat gttgactgtg gtc           1193

      <210> 389
      <211> 385
      <212> DNA
      <213> Pinus radiata

      <400> 389
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aaaaaagctt atgagttatc tctgctgtgc gatgcagaag tggctctcct cattttctcc     120
accagtggga gactctatga atttgcgaat aagagtgtta gcgcgacaac ggagcggtac     180
atgagaacct atgcagagaa catgcctcag tctcgagctc tgtatccgga ttgtcaccat     240
tggcaagagg aagtcagaaa acttacacag caacgtgata gtctaaccaa ttcgatcaga     300
caaataatgg gtgaaggcct tgaatcatta agcatgaagg agctcaagca tattcaagtt     360
caattggaaa aaagtattag ttgtg                                           385

      <210> 390
      <211> 359
      <212> DNA
      <213> Pinus radiata

      <400> 390
gtacactgca gagcaggtgg aagctctgga acgcctttac aatgactgcc caaagcccag      60
ctctctgcgt cgccagcagc tcatcagaga atgcccaatc ctttcacaca tcgagccgaa     120
gcaaatcaaa gtctggttcc agaatcgaag atgtagagag aaacagcgca aggaggcaag     180
tcgtctccag actgtcaaca gaaagctcac agccatgaat aagcttctta tggaggagaa     240
cgatcgcctt cagaagcaag tctcgcagtt ggtttacgag aatggctatt tcagacagca     300
gatacagact gtttctatta ccaccacaga tactagctgt gagtctgttg ttactagcg      359

      <210> 391
      <211> 257
      <212> DNA
      <213> Pinus radiata

      <400> 391
caagcatgaa tttgatgtgc ggtatcagaa gcttgaggac aaactatata ttgcacagct      60
ttatttcccc ctgattggac tgatattgga tgagatgccg gtttttttaca acctcagcac     120
agtggagaag cgtgaagttc taatctgtat catgcagata atccgcaatt tggatgaccc     180
atctcttatt aaggcatggc aacaaagtat tgctagaaca aggctctttt tcaagcttct     240
ggaagaatgt cttgtcc                                                    257

      <210> 392
      <211> 290
      <212> DNA
      <213> Pinus radiata

      <400> 392
ggcctcctcg tgactatgag actcttcgca gcgactgaac cgaaacgtgt cttcgcagtg      60
acaaaacgta tttttcttct tggtttcgtg tctttctttc tgcgtgaggg cctcgtagcc     120
agcgtgtggc ttcctgtttc tccgcaaaga ttatttgatt tcttgaggga tgagagactc     180
agaagcaagt gggatatact atcaaatgga ggtccaatgc aagaaatggc tcacattccg     240
aaaggacaag atcctcgcaa ctgtgtttct cttctaagag caagcatatg                290

      <210> 393
      <211> 465
      <212> DNA
      <213> Pinus radiata

      <400> 393
gctggtatca ttatacaaca atcatttgaa tggaatattg gcagatgaaa tgggtcttgg      60
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caaaacagtg caggtaattt cattaatatg ttacttgatg gaacaaaaga atgacagagg 120
acctttcttg gtagtagtgc cttcctctgt attgtctggt tggctgagtg aaattagctt 180
ttgggcccct agcatcagta aaattgcata tacaggttct cctgatgatc gccgtcgatt 240
attcagggag aacatttctc agcaaaaatt taacgtgctc ttaactacat atgaatactt 300
gatgaacaaa cgatcgacca agactgagta aaatttcatg gcattatatc ataattgatg 360
agggacatcg cataaaaaat gcatcttgca aactgaatgc tgagctgaag cactatcata 420
gtagtcatcg attattgctc acgggaacac cactccagaa taatc 465

<210> 394
<211> 157
<212> DNA
<213> Pinus radiata

<400> 394
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ctcaaattgg ttcataaatg cacgtgtccg tctctggaag cccatggtag aagaaatata 120
tatggaagaa atcaaggaag ctgagttagg acattca 157

<210> 395
<211> 384
<212> DNA
<213> Pinus radiata

<400> 395
accaatttaa cggcgaagca accgaccccc ctgaaatccc cttaacacga atttctgagc 60
tggggccggt attgtgtagc agcaggatga tgacgccaag gtttatgaat ccccccttcg 120
acggaagaac gcagaggcac cgcggacccg atggagattt ctacccctgg aatcggccct 180
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tcacaaattt ggttatgttt ttaacgagcc cgtcgatcct gtggccctgg gggttcccga 300
ctatttcact gttattacct cgcccatgga tttgggcacc atcaaggcaa aattgcagga 360
cagcgtttat tcaagccctc tcga 384

<210> 396
<211> 694
<212> DNA
<213> Pinus radiata

<400> 396
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cagatattct taaagatcgt cccgcttggc ttcatgattg tcggcgcctg gatgttttga 120
ctgcatttcc tacgggaaaa ggaggggcag tcgagcttct atacacgcaa atgtacgctc 180
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aggacgtgat cattgccata aattcatctc caag 694

<210> 397
<211> 493
<212> DNA
<213> Pinus radiata

<400> 397
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tcttcagcag atggcagtga ctgcaaatga caccagctct gattcagttg taacaagcgg 120
gcaacggcag caacactcac cgcaacatcc tccatacagt gtaagtacct ccaggttgtt 180
tttcatagca gaggagacat tgacagagtt tctagcaaaa gctacaggaa ctgctgtgga 240

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acatgcttgt ggtggagtgg ctgtgcaagc atggggtgtt gttagtttgg aaccttcaga     360
ggtagctgaa gccttgcgag ataaggtatc ttggctttgt gactgccgga agatggaggt     420
tctggggact tttgattcaa ctgatggacg gaaattggaa ctattacata cacagatgta     480
tgctccaata act                                                        493

      <210> 398
      <211> 436
      <212> DNA
      <213> Pinus radiata

      <400> 398
atggggaaga cgaagatgga gatgaaacac attcaaaacc ctagccgccg ccaagttact      60
ttctcgaaac gcaagaacgg attgctaaaa aaggcattcg agctttctgt tctctgcgat     120
gctgaagtcg cccttatcat tttctcggaa actggcaaga tcagcgagtt tgcaagccac     180
aacgacatgg caacaatact ggaaaaatat cgcatataca cgcaaacaga aacagatgga     240
aacatggggg cttcgtcggt ccaaagcgtg aagggatggt ttcctaattt tctcgagatt     300
gcgggattca gtgtttgtgg atgatcccta ttattgcagt gtgggttggg gcacgagggg     360
tgcagttgac tcgactcata tgattggaag gttggtgaat cacaattgaa agcgttgcac     420
gagaggatgg acaatt                                                     436

      <210> 399
      <211> 419
      <212> DNA
      <213> Pinus radiata

      <400> 399
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tctgagaact gattgtgtct tccttcggag ggagagggtt agcgaggttc agaaagagag     180
agaaagagaa agtagtccta agggactgtt taaaatgggg cgaggtccag tccagctgag     240
aaggatagaa aacaaaataa atcgtcaagt aacgttttcg aagagacgga atggctgat      300
aaagaaggcg tcagagctgt caatcctgtg tgatgcggaa gtggccttaa ttgtcttctc     360
caacaaaggc aaactctatg agttctccag ttccagtatg accaagattt tggaaagat      419

      <210> 400
      <211> 690
      <212> DNA
      <213> Pinus radiata

      <400> 400
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acagactcag aagtgaattg ccccagtatt tcagaagcaa cttcacagga gaacttgaat     120
aggtctgata gactaacaag taaattgtca ggaagtctga gttcttttcg ggcttcctca     180
agggatggga tgctaggaac taaatttcta ggtagtgtga atggccctga gtgtaacaaa     240
ccgatgcatc atggtacgaa tgcaattgga gcagcagagc tctcaaacac tttaactggt     300
tccaaatatt ttaaagcagc acagcaatta cttgatgaag ttgtaaatgt tggaaagggt     360
atcaagtctg attcagtcaa ccatcaaaaa tcccaaacat ggtttggtgc aatatctgac     420
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gcttcaattt ctgcagaagt aatgaaaaac gagcatgctt ttggactcac accagctgat     540
agacaagaac ttcagatgaa aaaggcaaag cttgttgcca tgttggatga ggtggatcga     600
aggtacagac agtactatca tcagatgcaa atcgttgttt catcgtttga gaccgcagct     660
ggatttgggg ctgccaagac atacacttct                                      690

      <210> 401
      <211> 383
      <212> DNA
      <213> Pinus radiata

      <400> 401
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gaagatcgaa agcacaagca acaggcaggt gacgttctcg aagcggcgga tggggttgct 240
taaaaaggca caggagcttt ccgtcttatg cgatgcagag gtcggcgtca tcattttctc 300
taataccggc agactctacg acttctcgag ctccagtatg gagaagatga ttgaaacata 360
ctatcgattt attgaaaaaa atg 383

<210> 402
<211> 846
<212> DNA
<213> Pinus radiata

<400> 402
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gatagacttc ctaccattgg atttgtgtct gttgcaggct gcataatgtg tttccatttt 180
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catagcctgt attatcagca gtgcttaatt aacgcgggaa acctttggat aaaaaaaaaa 840
aaaaaa 846

<210> 403
<211> 333
<212> DNA
<213> Pinus radiata

<400> 403
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ttggaagtct gctggtcatc cctcaataaa aaagcgaatt gctgatagca aagatcagcc 180
atgtaggcag tttacaccat gtgattgtca atccatgtgt ggaaagcaat gtccctgcct 240
acgtagtggg acttgttgtg aaaaatactg tgggtgttcg aaaggctgca agaatcgttt 300
ccgaggatgt cactgtgcaa agagtcaatg tcg 333

<210> 404
<211> 881
<212> DNA
<213> Pinus radiata

<400> 404
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gttggctacc ggcggtcaac ggccgccagc tctgcagcta aacctcgcag cccttgatag 120
cagcggagat ggcgcagccg ctaaagaaaa acgaacgccg aaggttaatc cgtattatct 180
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gaagaatttt ccttttggtg aaaccccaaa gaagaatttg aagaagacgg agcctcttct 780

gggtttgtcg ccacggcctc cacctaatgc aaagtccaag gctaatcaga ctttgcgagc 840
ccctgctccc aaaaaaccca aggcaaaaga ccttcataag c 881

<210> 405
<211> 434
<212> DNA
<213> Pinus radiata

<400> 405
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acgtttcagt tggcgataca ttattattga tgaagcacat cgaataaaga atgaaaattc 120
acttcttgca aagacaatga gaatctacag caccaactac aggcttctta taactggcac 180
acctcttcaa aacaaccttc acgaactctg gtctcttctc aatttcttac ttccagaaat 240
ttttagttct gctgaaactt ttgatgactg gttccaaata tcagctgaca atgaccaaca 300
agaagtggtt caacaacttc ataaggttct tcggccattt cttctacgga gactgaagtc 360
agatgttgaa aagggtttgc ctcctaaaaa ggaaaccata ttgaaagttg gaatgtcaca 420
aatgcaaaag caat 434

<210> 406
<211> 450
<212> DNA
<213> Pinus radiata

<400> 406
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acgaacttga aaccagccac agcaacagga acaagtatgc ctgaccatat tcaacttcta 300
ctacacatca atgccggtgg ttttaatcta catttattga tcatgaatgt ttgcttttgc 360
ttcttctaat gttctaggcg ggctacattt aatttagagg gttcattctg gaatctgact 420
agccatcagt ttctattctg tgataaggga 450

<210> 407
<211> 376
<212> DNA
<213> Pinus radiata

<400> 407
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aataaatcgc cttgctgctc gtagtgacga agaattttgg ctctttgaga aaatggatga 240
ggaaaggagg caaaaggagg ggtatcggtc aaggttaatg gaggagcatg aagttccaga 300
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tcttggtttt gaccag 376

<210> 408
<211> 551
<212> DNA
<213> Pinus radiata

<400> 408
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aagttgcggc gcgtctagat gcgcttagcc atgaatacga aaaccaacaa catcggtcga 180
gtctgagcat cggaatggac ccagaactag atcaatttat ggaggcttac tgcgaaatgt 240
taactaaata ccacgaggag ctcacaaagc ctttcaaaga agcgatgtca tttttgaaga 300
agattgaagc ccagctcaat tccctaggca aaggaacaat acgaatttct ccttcagccg 360
agaatgatga aaagaccgag ggaggtgcat cttcagagga ggtcgaggat ggcagtggtg 420
gtgaaacgga ctttcaggaa gtggatcacc atgctgtaga agatcgggaa ttaaaagatc 480

atctccttcg taaatatagt ggatatctga gtagtctaaa gcaggaattc atgaagaaaa 540
aaaaaaaaaa a 551

<210> 409
<211> 366
<212> DNA
<213> Pinus radiata

<400> 409
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attgatgctc gaacaataga acaacgtctt gaccgctttt catatgggag tgttcttgac 180
tttgctgcag atgtgcagtt gatgctggag aatgctatac gtttttatgg tcactcttct 240
gaggtcaagg caaatgcaag gaggcttcaa gctctcttct tccagcgtat ggctgattcc 300
ttcccagatg ataattttag ctcttttaaa actcgaagct tggttgctct tggtcaaagt 360
gcaaat 366

<210> 410
<211> 346
<212> DNA
<213> Pinus radiata

<400> 410
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tgtgagcgtc tcgcaagtgt cttggctagc aatatcccat caagggacct tggggttata 120
cctagccctg aagggagaaa gagcatactt aagttagctg agcgcatggt cacaagcttc 180
tgcgctggtg taagtgcatc aactgcacat acttggacaa ctctgtctgg aagcggtgct 240
gaagacgttc gtgtgatgac cagaaagagt gtagatgatc caggcaggcc tcccggcatt 300
attcttagtg ctgcaacatc cctctggctg cctgtgcccc ccaaaa 346

<210> 411
<211> 393
<212> DNA
<213> Pinus radiata

<400> 411
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agtgtggtaa atttggtttg ctagagaggc tattaaaaca tttgaaagct caaaaacaca 120
agatgttgat attttctcaa tggactaaag ttcttgactt gctggaatac tatctaagtg 180
agagaggata tgaggtttgt cgcattgatg gaagtgttaa gttggaagat aggaaaaatc 240
agataaggga tttcaatgac ccagatagca acttttgtat ctttttgcta agcacacggg 300
ctggtggtct tggaatcaat cttactgatg cagacacttg ttttatctat gatagtgatt 360
ggaatcctca aatggatatg caagctatgg atc 393

<210> 412
<211> 830
<212> DNA
<213> Pinus radiata

<400> 412
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attgacgcgc aattagagca gtcgcagcat gtcgtcacca aatattccgt ccttggcaac 660

gataatttcc tcgtcggcga caagaaagaa ctcgatcagt tcatgacaca atatgttttg 720
ctgctttgtt ctttcaagga gcagctgcaa tatcacgttc atgttcatgt tatggaagcc 780
gtgagggcat gcattgacct tcagcattct cttctaacac taacaggagt 830

<210> 413
<211> 371
<212> DNA
<213> Pinus radiata

<400> 413
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ccagattaga atcctagaaa tgttttacaa gggaggaatg cgcacccccca atgcagaaca 120
aatcgagcac attacagcac agctgaggca gtatgggaag attgaaggca agaatgtgtt 180
ctactggttt cagaaccaca aagccagaga aaggcagaag caaaagcgta acagcagcat 240
gcaccaggta gctgctactg cagcaaagaa aactccaaca acaataatgg cagataaccc 300
taatgaactt cacaagccca actccaacgg cacatactct ctctataatt tgcctttcac 360
agcaatgtct g 371

<210> 414
<211> 395
<212> DNA
<213> Pinus radiata

<400> 414
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ttctctgcga tgctgaagtc gccctgatca ttttctcgga aactggcaag atctgcgagt 180
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atggaaacat ggagtcgtcg tcggtccaaa gcgtgaaggt ttgactagaa tgagaatttg 300
aagtttaacc cctgcaaata ttatattgaa gggaaatcat ggtccaaaat caagtcgcca 360
cccaagttaa agtgcaatgt aatcacttta gcttg 395

<210> 415
<211> 413
<212> DNA
<213> Pinus radiata

<400> 415
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acattgggga tgaagatggt tctgatgatt gcatccattt gggagagaaa aaaagaaggt 180
tgaccttaga gcaagtgagg gctctagaaa aaaatttcga aatggcaaac aaacttgaac 240
cagagaagaa aatgcaatta gcaaaggctc taggtctgca gccaaggcaa attgcagtgt 300
ggtttcaaaa caggagagca agatggaaaa ccaagcaact agagaaggac ttcaatattc 360
tcaagcacga ctatgattct ctgaagcaaa attatgataa tcttatggaa gaa 413

<210> 416
<211> 355
<212> DNA
<213> Pinus radiata

<400> 416
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cgccaagtta ctttctcgaa acgcaagaac ggattgctaa aaaaggcatt cgagctttct 120
gttctctgcg atgctgaagt cgcccttatc attttctcgg aaactggcaa gatcagcgag 180
tttgcaagcc acaacgacat ggcaacaata ctggaaaaat atcgcatata cacgcaaaca 240
gaaacagatg gaaacatggg ggcttcgtcg gtccaaagcg tgaaggttgg tgaatcacaa 300
ttgaaagcgt tgcacgagag gatggacaat ttgaaaaaaa aggaacgaaa catgg 355

<210> 417
<211> 661

<212> DNA
<213> Pinus radiata

<400> 417
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ctccccgtctc tgcctaagta aattctcaca ataatatata cagccattct ctccatattt 120
ccgtaatcgg atgatacttc tggtttttct gttgctgtca tcgtgagaaa gatttgcgtt 180
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caaggggtag ttgtctgtat taaataaaaa tggcgtccaa tgggattatg ttcaatgctt 420
ccaatcgaaa tttgatcgtc atggtgaatg aagctccatc cttcgaagct aattcaagtt 480
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aagcagggga tgaggatttg ctggacgagt gcgttcatca gccaggaaag aaaagaagac 600
tttcggtaga gcaagttcgc tttctggaaa agagctttga gttggacaac aagcttgagc 660
c 661

<210> 418
<211> 323
<212> DNA
<213> Pinus radiata

<400> 418
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cccttggcga ccgcagagag gacttcctga acgctctgtt tctgttcttc gtgcatggtt 120
gtttgagcat tttctgcacc cgtatccaac tgatgcagat aagcatatat tggctaagca 180
aactggcctt acaagaagtc aggtatcaaa ttggtttata aatgccaggg ttagactatg 240
gaagcccatg gtggaggaga tgtacatgga agaactcaag gaagaaaaag tggaccaagg 300
tacacacaat tctgaagctg aaa 323

<210> 419
<211> 1571
<212> DNA
<213> Pinus radiata

<400> 419
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catacatata tatatttcaa ccaggtctga tatatatttg tgggaatcat atctaatact 120
gaaagcattt gctttctgct gctgctgtga tctattccta tgttctgtat tcgaatatga 180
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gattttgtta ttataaatca agttttttta tacatgatca tgccaacagc aaattgtaat 480
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tgctgaagag gactatgatg gtggttattg agtgttgatt aaataacaga ccccccaaca 720
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gagaaaaaga tacagttggc tcaagagctt ggacttcaac cccgtcaagt agctatttgg 1440
ttccagaaca gaagggcgag atggaagacc aagcagcttg agagagatta cagcgttctc 1500

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atccgtgccg a                                                          1571

      <210> 420
      <211> 339
      <212> DNA
      <213> Pinus radiata

      <400> 420
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gtggtgcttg cggagtacac ggaattcaaa ggcaatttta caggtattgc cgctcagtgt     180
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aactaccttg atgaagatgg cttcgcatat tgtgttgttg cagatgaatc cgttggaagg     300
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      <210> 421
      <211> 332
      <212> DNA
      <213> Pinus radiata

      <400> 421
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gactgggcag caaacgagga agaagaggag gctgagcttg cagcaggtga gatctctgga     120
gaaaaccttt gaggttgaga acaagcttga gccagaaagg aaattacaac ttgcacagga     180
attgggcctc cagcccagac aggttgctgt ttggttccag aataggcgtg ctcgctggaa     240
aaccaagcag ctcgagagag attacggaca gcttaaactc aatttcgagt gccttaaatc     300
gaacttcgat gccatcaagc aggaaaacca ga                                   332

      <210> 422
      <211> 461
      <212> DNA
      <213> Pinus radiata

      <400> 422
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cgcgagactg tagaatttta gggttgtttt ccacaaaccg acttttcccg acttcaaatc     120
ttgatattga agtgacatgg ccggcgagaa aagaaaagatt aatagaatag ctaacgcttc    180
ggccaggcag gtcaccttcg cgaagaggcg gaggggggctg ttcaaaaaag ctcaggagct    240
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aattcaaaag gatggaaagc caaatctgga ggagagtcac gatatccaaa agataaaaca     420
acaaattaaa gatattagtc aaaatttgag aaaactgcgt g                          461

      <210> 423
      <211> 622
      <212> DNA
      <213> Pinus radiata

      <400> 423
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cccttggaga ttttacattc ttaagaaaca gatgggtatg gatatggagg actgcaatac     120
agggcttggt ctgggaatga gtattggcct tgggatgaat ctaatgagag aagaccttca     180
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atcggccggg gaatcgaaag caaccgtgcc caggcgaatc gatgtgaaca aattgcccgc     360
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gagcgtcaag agagagcgcg aagccaccga ggaattggag gcggagagag cttgctctag     540
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ggagcaatcg gctcttttgg ag                                               622
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<210> 424
<211> 373
<212> DNA
<213> Pinus radiata

<400> 424
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tgatgctgaa gtttccctca tcattttatc tgaaaccgcc aagatttacg agtttgcaag 180
caacaagtcg tgactagctc ttgtgaattc ttctgatcaa gttagagatc catatactga 240
tatataaaag catactttca cattgcaatt ggagcagatc tagatgcaga agtgcaacct 300
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gatacagagt ctg 373

<210> 425
<211> 440
<212> DNA
<213> Pinus radiata

<400> 425
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tctggctctc aatttgccat ggatttaagt gccattaatc ttgattactt ggcagtcctt 180
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gcctcgactc ttcatagttt aggttattgg cactacccat cagctgtgat gtcaatctct 420
tttataaata tgaatccctg 440

<210> 426
<211> 280
<212> DNA
<213> Pinus radiata

<400> 426
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gtggtcttgg ccgagtacac ccaattcacg ggcaatttca caacaattgc caatcaatgc 180
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aattatctcg tcgaagatgg ttcacatact gtgttgttgc 280

<210> 427
<211> 539
<212> DNA
<213> Pinus radiata

<400> 427
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gatgatgacg atgtaccaga gctcgttgaa ggtgagacat ttgaggaagc agctaagaaa 480
gactcctctt aaattttaat agatgagggg gcatgggatg tggaacaagc tagactgaa 539

<210> 428
<211> 1020
<212> DNA

<213> Pinus radiata

<400> 428
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tcactgagct gccataggtt tcttggaact ctttttccg cggctcttgc gagtttcaca 180
ggtttttgtt tgattgtatt ttgagggttt ttctttcttc gagggttttg ttttcccgtt 240
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agattggacc tgattatcct atatttgttg gagatttagc atctgatgtg acagactatt 840
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atagggttac aggccgttca aaaggatatg ggtttgtaag gtttggggat gagaatgagc 960
aagttcgggc tatgacagag atgaatgggg tgttttgttc ctcaagacct atgcgaatag 1020

<210> 429
<211> 246
<212> DNA
<213> Pinus radiata

<400> 429
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acatctgtga gaggtgcaaa agttgtaaca gatccatcca caggccgttc aaaaggttat 180
ggatttgtta agtttgctga tgagaatgag agaaatcgtg ccatgactga aatgaatggt 240
gtttat 246

<210> 430
<211> 323
<212> DNA
<213> Pinus radiata

<400> 430
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aatatagaag gctggatgga actatgtctg taatagcacg ggataaagct gtgaatgatt 180
tcaagacact ccctgaggta actgttatga taatgtcctt gaaagctgca agtcttggtc 240
tcaacatggt tgctgcaagt catgttcttc tgcttgatct ttgggtggaa tcccaacaac 300
tgaagaccaa gctattgaca ggg 323

<210> 431
<211> 414
<212> DNA
<213> Pinus radiata

<400> 431
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accatgtgaa cggaagcgat ccgcatccat atggccattc gccccacggt cctatggctt 180
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gttattgtaa agaagtgata gagatggaaa tgggtcatgg taatggagac tgtaaagttt 300
aaactataaa atgtaaagtt gaattcctct ctgatgttca gtgtttactt tttttgaatt 360
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<210> 432

<211> 525
<212> DNA
<213> Pinus radiata

<400> 432
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caatttaagg gaattcgact gcgaaaatgg ggaaggtggg tatcggaaat ccggataccc 180
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aaatatgcct tgggccagcc ccctccgagt ttgcagtctc tggaagggca cgccgccctc 420
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aaatatgcat tgggccagcc ccctccgagt ttgcagtctc tgcaa 525

<210> 433
<211> 1196
<212> DNA
<213> Pinus radiata

<400> 433
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atcgggagat cgcgggttcg agtccgttct tgtgttttct ccgcgtccgg agcactcagt 120
tcaggtgccc aaaaattgat cgttttcggt caaatttcgt taatttccga ggacgacttg 180
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<210> 434
<211> 726
<212> DNA
<213> Pinus radiata

<400> 434
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gaattccggt tgccgtcaga tgaggacacg gcatcatcgt cctgcggttc ggtaacggaa 660
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ttcctg 726

<210> 435
<211> 266
<212> DNA
<213> Pinus radiata

<400> 435
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caggaggctg ccccttcgcc gccagaggag gcaactttga atcagcaaac tccaccgtac 180
agaggcgtgc gtcgtcgcaa ctgggggaaa tggtgtccg aaattcgaga accgaaaaag 240
aaaacccgaa tctggctcgg ctcctt 266

<210> 436
<211> 1775
<212> DNA
<213> Pinus radiata

<400> 436
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ccgtcgatcg taattcgtag aatctggacg cggctacaaa atcgctgccc gactccaacg 120
ttttctccag ttcggccagt gaggaagttt gagggttcac gttattgaga gaggacgcta 180
tttggttgcg atttcgagtg ctgtaagcag gcaacgacgc ctgttttgct ttagagttta 240
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ggaggattcc gacgatgacg agttcctcga ttttgaggag agctatcaga acaagaagaa 480
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caggccttcg tctaataggg aacttgttta gatttttccc cttttttttt tttaaattca 1740
gtttgacggt gccactgtga tttaatctgc acatt 1775

<210> 437
<211> 585
<212> DNA
<213> Pinus radiata

<400> 437
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attttagata aaagttaaga catttatgaa atccaaatct aaaaccagca aaaaccaaac 120
tcagtgtcga tctcatcgat cagagtagac cacaagtatt tctggtgtga atcacatcgg 180
agatggcatt cgcaggaaca cagcagaagt gcaaggcatg cgagaagacg gtgtacgtgg 240
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ccaaagctgt gaaaaatgag aagttgaatg atggtgagat taagacaccc aacagggtct     480
ctgctttgtt ttctggcaca caagagaaat gccttgcttg tggaaataca gtttatccca     540
ttgaaaaggt ttctgtggaa ggtgtgggat accacaaggc atgct                     585

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      <211> 351
      <212> DNA
      <213> Pinus radiata

      <400> 438
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tccatgtatt gatttgggtt ttttcacttt tgggtttttt cgatttctct ggggttttag     120
ggtatggatg gatctcagaa cagcggcggc aatgcggtgc ctccgtttct aaccaagacg     180
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agtttcattg tgtggaatcc cccggaattt gcacgagact tgttacccaa gtactttaag     300
cacaacaatt tctccagctt tgtcaggcag ctcaatacat atggcttcag g              351

      <210> 439
      <211> 292
      <212> DNA
      <213> Pinus radiata

      <400> 439
catgagaaga aggcagtatt gtggaacatg gatactctca aagctaaagg ttcccttgaa      60
gagcattcct ttttgatcac tgatgtgcga ttcagtccta attcaacgcg cttggctaca     120
tcctcttttg acagaacagt caaagtctgg gatgcagaca atccaaacta taccttgcgt     180
actttttctg gtcatactgg gtctgtaatg tctcttgatt tccacccgaa caatgaagat     240
cttatttgct cttgtgacgg ggaaagtgaa gtccgttact ggagtgttaa cc             292

      <210> 440
      <211> 352
      <212> DNA
      <213> Pinus radiata

      <400> 440
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gaatgaacgc ttatatggat ctggaaacac cccttctgga ggagtagctt taccatttat     120
cttggttcag acccgtccac aggcaacggt tgaaattgaa atctctgaag acatgcagtt     180
agttcacttt gacttcaaca gcacaccttt tgagctccat gatgatgcat atgtgctcaa     240
agcaatggga ttttgtgaaa agccatttac tgatggtatg gatgttactg gccatgatag     300
ttttgcaaat ggaactggat tcggagaaaa taacatgact ataactaaca tg             352

      <210> 441
      <211> 441
      <212> DNA
      <213> Pinus radiata

      <400> 441
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gcttgcgccg cagatcgagc cggacgtcgc gatcgtcgac ctgttgatgc cgtcggtctc     180
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cgcgctgaag acccagccgg cgccggacat cctcgatgcg gtccgccgca ccgtggccgg     360
cgagagctac ctgccgccga gcgtgtcgcg cgaggcgatc gacgccgagc tcgccggcgg     420
cgccccgcca tcgctcgcgc a                                               441

      <210> 442
      <211> 1056
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<212> DNA
<213> Pinus radiata

<400> 442
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ccaggtaggt cttcattcta ttccttcaat catggatccg ccctactctc agtaagctat 180
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cgtgggcaaa ttcaggaccg tccaagaata caattatgaa accctaaggt caaatgtaga 720
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<210> 443
<211> 367
<212> DNA
<213> Pinus radiata

<400> 443
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agcaagagct gttggtgtgg gagtaaaacg cttgtatcac ggtgctcagt actcaacaaa 120
gggacgtcaa caaatgccgg tgttgggcct gttctatcgt gtggtcaacc atgtggacgt 180
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gggacaggta tagtcgagac ctgtgtagta gaaggagagg gttcctggga aggcagatgg 360
caatgcg 367

<210> 444
<211> 553
<212> DNA
<213> Pinus radiata

<400> 444
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tgccgaggaa gctttgcaaa agttacacgg cactgttatt ggtcaacaat ctattcgcct 420
ttcttggggt cgatctccag caaacaagca gactgcaagc tggggagtgc agcctcaagc 480
agatccaaat caatggaatg gtggtggagc ttattacggt tatggtcaag gttatgaagc 540
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<210> 445
<211> 381
<212> DNA
<213> Pinus radiata

<400> 445
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cgatgccgcc ttatattgct tgagaggccc caacgccaaa ttcaactttc cggacactgt      300
accttcaatt ccgtcggcgt tttctctttc acgccaccag attcagctcg ccgccgctag      360
atatgcccgg gacgaactgc c                                                381

      <210> 446
      <211> 516
      <212> DNA
      <213> Pinus radiata

      <400> 446
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agtccactcg ttttgatgta gtgccagaga tcgactcaga tagattccga tgttttgggt      120
ttctgttttt aaccttggaa ggttcaattt tacagtttct acgggaattc tcatattcaa      180
tctgtttggc agattgaact aaagattttt gtccgggtga tttttggatt aaattcaagg      240
tcgacgaacg tgaggtgcta gggcttttag agtttggatg gaacccatgg acatcgttgg      300
caagtccaag gatgacgtct cgcttcccaa agcaaccatg tttaaaatta taaaagagat      360
gctgcctcca gatgttcgtg ttgcaagaga tgctcaggac ttactggtcg agtgttgtgt      420
ggagtttatc aatctaatat cttcagaatc caatgaagtt tgtggcagag aggaaaaacg      480
aacaattgca cctgagcatg tgctgagagc cttgga                                516

      <210> 447
      <211> 396
      <212> DNA
      <213> Pinus radiata

      <400> 447
gaaatatcac tattttggct tcagagtttc tgcaaattgc caaatatgga gaatgttccc       60
gagcaggaac ctgacaatac catttctctg ccacacgaag atcgcggttc ccgccaattt      120
aagggaatcc gactgcgaaa atgggggagc tgggtatctg aaatccggat gcccagatcc      180
agaaagaaga tctggctcgg ctcatacact acccctgagc aggctgcccg cgcttacgac      240
gccgcagtgt attgtctgag agggcgcaat gccgaattca acttttctgt gcccgacatt      300
ccgactgcgt ctcccctttc ccgtgagcaa attcagcatg ccgccgccga atatgccttg      360
ggcaaagccc cttccagttt tccctctttc gcaggg                                396

      <210> 448
      <211> 946
      <212> DNA
      <213> Pinus radiata

      <400> 448
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ccctggtcgg atcagagagg ctcagacaaa gatagcggga atgaattagg ccgcactaat      120
ttgaatcccg gccaaatacc gcggcggagg acgaggacga ccacactccg gcctaaattc      180
gccgcctttt ttataattaa aaacataaaa aggccgacgc catgaacgaa ccagacgagc      240
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cggcggagca caagaagcag cggtccaaga actggacgcg agcggagacg ctgaaactca      420
tccgcctgcg agcggaaatg gagccgcggt tcgcgcgcag cgggcggaag tcggagctgt      480
gggaggagat cgctgaagcg ctccgccgag agagcgtggt ccgagacgcg cagcgttgca      540
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cggcggcagc ggccgccgct gccgctaccg ccgccacggc ggcgaatttt gtttccgccg      720
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tcctggagag cctggtgagt cggcagcaga ggtttttcgt ggatctgctg gattccatgg      900
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      <210> 449
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<211> 1140
<212> DNA
<213> Pinus radiata

<400> 449
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aaaggcgtct ggatggaggt ccagattatt ctatttttgt gggagatttg gattcagatg 180
tctcagattt ggtcttgcag gagactttcc aaactcgata tccatcagtg aaagctgcta 240
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aggagagtga gagggcccga gccatgacag aaatgaatgg tgtatattgt tctactagac 360
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gaagagcagg caatggtgga tctcatgccc aaggattccc gtcagacaat gataaacaat 480
acaactatat ttgtgggacg gctagatcca aatgctacag atgaagatct gagacaagtc 540
tttggccagt atggtgatct tgtgtccatc aaaatacctg ttggtaaagg ttgtggattt 600
gtccagtttg cgaacagggc ttgtgctgag gaagcattgc aaaggctcca tggtactgtt 660
attcgtcagc aaactatacg cctttcttgg ggtcgaagcc ctgcaaacaa gcagaattct 720
cagccacagg ggcaacagcc tcagtctgat ccaaatcaat ggaatggtgc ttactatggg 780
caaggctatg aaagctatgg ttatgccccc cctcctcaag atcctgcaat gtatgcttat 840
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gttttcagtc tggaggctgc aattgttttg ttttctttac caggtatagc aacgtatttg 1020
ctagttgtgt aagcacataa aaattattgc ttcatattca ggttttcatt atctgagatc 1080
aacatatatt ttccctagtt atattacata tttccttata attttaaaaa aaaaaaaaaa 1140

<210> 450
<211> 390
<212> DNA
<213> Pinus radiata

<400> 450
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gagaaaggta acttcagcca gctttcaaag gcaacaccta caaaaggggt gactgagaac 180
tcagacacag acgacaagtg atcattcggg ccagattttt gttgagagag ttgtagtgtg 240
taattgattc atttcataca tttgatatgc aagcctgtat caagcttatc gataccgtcg 300
acctcgaggg ggggcccggt acccaattcg ccctatagtg agtcgtatta cgcgcgctca 360
ctggccgtcg ttttacaacg tcgtgactgg 390

<210> 451
<211> 460
<212> DNA
<213> Pinus radiata

<400> 451
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ggggaaaatg ggtttctgaa gtgagggagc cgaacaagcg gtctcgcata tggctcggct 120
cctattccac tcccgaggcc gctgccaggg cctatgatac tgccgttttc tacctcagag 180
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ggctttcgca gctcggggag ctctcaccgt cctctattca gcggagagcg gccgaggtcg 300
gcgcggccgt cgaccatgcc atgcaggcgg gcccggttcc tgctcagacc ctgagggaaa 360
taaaccaaga aaatgatatg aagaacgcct tgagctcaaa attgagcgag ggcaataatt 420
tcaagatcga agcaaaaaat aatatgaggc agcagggctt 460

<210> 452
<211> 1116
<212> DNA
<213> Pinus radiata

<400> 452
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ccgaagcttt gagaggttga aattcagact tttgctccga actgttctgc tgaaacaaaa     120
tccagtattg agctaggttt agaatcgggt ttgctggtca tctgggagag gcgatccatt     180
cagcttcgca ggccccgaa gatggcgttc gccggcacaa cccagaagtg caaggcatgt     240
gaaaagacgg tctatttggt tgatcaattg acagctgata attctgtttt tcacaaatcc     300
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ggagttctat attgcaaacc tcattttgac cagctgttta agagaacagg aagtttggat     420
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<210> 453
<211> 439
<212> DNA
<213> Pinus radiata

<400> 453

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aaactgccaa ataaagtcgc ggcagttcaa aggaatccga ctgagaaaat gggggaaatg     180
ggtgtcggaa attagaatgc cgaattccag ggccaaaatc tggctgggct cctacgactc     240
cccggaaaaa gctgcccgcg cctacgactt tgcgttgtac tgtctaagag ggtcgaaggc     300
cacattcaat tttcccgact ccccgccgga aattccatgc gcctctgacc tgtcgccgcc     360
gcaaattcaa gccgccgcgg ccaggttcgc tacagaagat ttccggctgc cgtcggaaga     420
ggacgcggcg tcctcctct                                                 439
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<210> 454
<211> 481
<212> DNA
<213> Pinus radiata

<400> 454

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gcaattccta gtctcatttc agtgattcac tcactgaaat tattgttaga atcactgttt      60
tggccccaga gcttctgcgt cgccaaatat ggagatacgc ctccagcagg aaaacgacca     120
ggacattgct ccgccacacg aagatcgcgt gtcccgcaa tttaaaggag tccgaccgcg      180
taaatggggg atatgggtat cggaaatccg gatgccgaga tctcgacaga aaatatggct     240
gggctcgtac aaaaagcccg agcaggccgc ccgcgcctac gacgccgcag tgtattgtct     300
gagagggtcg aacgccaagt tcaatttccc caattctgtg cccgacattc cgtctgcgtc     360
ttctctttcc cgccagcaga ttcaactcgc tgccgccaaa tatgcgttgg atcagtcccc     420
ttcaagcccg ccgtctctga acaataataa agaggaaccc gcgtcaccgt cgcagtcgtc     480
t                                                                     481
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<210> 455
<211> 382
<212> DNA
<213> Pinus radiata

<400> 455

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tctcatcgac caacaatgac tcagcagaca acctcaccaa cagttagtcc cgccgcactt     120
gctcttccca cttctgcctc atccacatct gcaaagtctg cagctgttcc agtaccagcc     180
caagccaacc ctcgcaaacg tcctcgttcg gatctctccg cagaggagaa gcgagaggct     240
cgtgctcatc ggaacagaat cgcagctcag aactctcgtg acaaacgcaa acagcagttc     300
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actagtctcg aacaacgagt catcgacctc gagaacgaga accgccaatt acgagacgct 360
ctcgccactt cgcagccgaa cc 382

<210> 456
<211> 201
<212> DNA
<213> Pinus radiata

<400> 456
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tgcttaatct gaccccctcg gcaatcagtc agtctattca gaaactgcgc gttatattcc 120
ctgacccatt gtttattcgc aaaggccagg gtgtcactcc taccgcattt gcgatgcatc 180
tacatgagta tatcagtcag g 201

<210> 457
<211> 435
<212> DNA
<213> Pinus radiata

<400> 457
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gaaacaagat tacagcagca gcgaaggaca aatgaaaggg ccgcagggga ttagcaatgc 120
tcaaaacact tgtaccaaat tccgaatgcc aacatcagag aacttgattc ccattcgcct 180
tgatattgaa attgatggac tacgtttgaa ggatgcattt acgtggaatg taaatgatcc 240
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agggcaggaa atgaacacag gacaaaaagt gctccccctt aagcttccct aaaatttagt 420
atatatatcc tcctt 435

<210> 458
<211> 654
<212> DNA
<213> Pinus radiata

<400> 458
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tcatccattc cccacggcat tagattcaat ccattctatt aggctccttt aagcgaggtc 180
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tgttgaaaaa cattcacagg cgcaagcctg ttcatagcca cagtcagcag aaaggagaga 600
gtttgtctgg aggatcatgt gtggaaatca aacaacttga agatgagact gaga 654

<210> 459
<211> 675
<212> DNA
<213> Pinus radiata

<400> 459
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gggtcgaaac cctctgggtc ccagagatca gcccatgaaa cttcatggca gcagcctatc 180
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gatcaggtta cccagaaaca gaaccaggtt atggctgggg acttttgata ctgcagagga 300
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ttttcctcac cttaaacacc atttggaagc aaattccttc gccccctgga ctggtaattc 420
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tttggaaagc atgtctaaga ccgaagaatc agaagaaatt tcatgtgcat atgagaattc 540
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gtccgagact tgtgattctg atagtagtga tgattccacc attacagcgt tgaattcatc 660
tggggatcag aatcc 675

<210> 460
<211> 1014
<212> DNA
<213> Pinus radiata

<400> 460
cccggataga agcccccggt cggagaacga atccggcggc ggtcacatgg gcggcagcgc 60
atttctctgt gaaagagcag gatcggttcc tgcccatagc caacgtgggg cgcataatga 120
agaaggccct gcccgccaat ggcaaggttt cgaaggatgc caaagaaact gtgcaggagt 180
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<210> 461
<211> 301
<212> DNA
<213> Pinus radiata

<400> 461
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a 301

<210> 462
<211> 384
<212> DNA
<213> Pinus radiata

<400> 462
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tcgtgtaacc agagatgctc aggatcttct agttgaatgc tgtgtagagt tcatcaattt 180
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acatgttctg gaatctctaa agattcttgg ctttgggagc tatattaggg aggttaaagc 300
tgcttatgag caacacagga ttgagaattg ggattgtcca agagcaggaa ctagatggag 360
taaaaacaga ttggaaatga caga 384

<210> 463
<211> 484
<212> DNA
<213> Pinus radiata

<400> 463
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agtt 484

<210> 464
<211> 1434
<212> DNA
<213> Pinus radiata

<400> 464
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aggaccctgc cctgctattt ggccttgtga gcgattcagg agaaatgggg tggcaacagc 180
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gactactgcc aagaaaaacg gccagcagca gccgccgccc ccccagtctc agcctgctaa 420
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<210> 465
<211> 364
<212> DNA
<213> Pinus radiata

<400> 465
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cgtataatga ggttgcagat gaattagttg cagaatatgc aaatcctaac agtgcgctca 180
tttctcctga tcagcaacaa tatgatgaga aaaacataag gcggagggtg tatgatgcat 240
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gggg 364

<210> 466
<211> 237
<212> DNA
<213> Pinus radiata

<400> 466
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cagctctagc atatgatcac gaggcttaca aattgagagg tgagaatgct cgtctcaact 180
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<210> 467
<211> 578
<212> DNA
<213> Pinus radiata

<400> 467
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<210> 468
<211> 432
<212> DNA
<213> Pinus radiata

<400> 468
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<210> 469
<211> 657
<212> DNA
<213> Pinus radiata

<400> 469
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<210> 470
<211> 581
<212> DNA
<213> Pinus radiata

<400> 470
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<210> 471
<211> 451
<212> DNA
<213> Pinus radiata

<400> 471
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gggtggtcaa aaggtgcctg ttgttggggt a 451

<210> 472
<211> 1286
<212> DNA
<213> Pinus radiata

<400> 472
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<210> 473
<211> 1358
<212> DNA
<213> Pinus radiata

<400> 473
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cgggtagaag gcaggggtat aggcttttg ggctgtgtct gtcgcttcga gacgacttct 180
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<210> 474
<211> 517
<212> DNA
<213> Pinus radiata

<400> 474
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tacccaagca agagaactgt tcagaggctg gggaaactga gttgacagac agtcagattg 480
tgaagtatca acctgcttca ggtgatgaat gtagtgc 517

<210> 475
<211> 337
<212> DNA
<213> Pinus radiata

<400> 475
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ggtgctgctg gggtcagatc tagtgttgat tcggagcatt cggatataga ggcgtctttt 120
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cctgccaatg gtagagaaga acctctgaat catgtagaag ctgaaaggca gaggcgagag 240
aagttgaacc agaggtttta cgcactccgc gctgtggttc ccaatgtgtc caagatggat 300
aaggcctctc tgttgggtga tgccatttct tacatta 337

<210> 476
<211> 362
<212> DNA
<213> Pinus radiata

<400> 476
caatatcata tcccaactca cgaaatagac aatctctttt tatgatggtc aatgataaag 60

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aaaagtaatg gtagattctc gtaaccaata accttttaat agctgccaat gagtccaaat     120
tcattctgtc gatgcaatat tgactgtatg cagaagaatc gagcactgtc acgcatctcc     180
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ac                                                                    362

      <210> 477
      <211> 612
      <212> DNA
      <213> Pinus radiata

      <400> 477
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ctccttacga agatggaatt ggtctagaat ggctgtcgga cttcgtggag gattcctttg     120
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gcaggctctt ccccgaatac aggcctgcca agagccccac tttcattcga tacattcatt     600
caaattccca ta                                                         612

      <210> 478
      <211> 680
      <212> DNA
      <213> Pinus radiata

      <400> 478
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gacaacgctt gaatcactac aaagactcat cgttcaaaag aaatgtctcc tttttggcaa     120
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      <210> 479
      <211> 544
      <212> DNA
      <213> Pinus radiata

      <400> 479
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cccctacctc cggctcaggc tgtgagagag tcgagaaatg gagtgggcag aggaggtcga     480
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<211> 971
<212> DNA
<213> Pinus radiata

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<210> 481
<211> 710
<212> DNA
<213> Pinus radiata

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aatgggccgc agagattcgt gatcctaaga aggcagctcg agtatggttg 710

<210> 482
<211> 1240
<212> DNA
<213> Pinus radiata

<400> 482
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<210> 483
<211> 516
<212> DNA
<213> Pinus radiata

<400> 483
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cacggcaact cccaggcagg actgacaacg aaatca 516

<210> 484
<211> 328
<212> DNA
<213> Pinus radiata

<400> 484
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<210> 485
<211> 919
<212> DNA
<213> Pinus radiata

<400> 485
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tgtggaaaaa gatgatggtg ggcctccagg cattgaaaca gggaataatt gcagtagtgg 720
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accagatttt tcacaagttt ataagttcat tggcagtgtc tttgacccga gcacaactga 840
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<210> 486
<211> 359
<212> DNA
<213> Pinus radiata

<400> 486
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gctgaggagg atacaatttt gagtgaacat atcaaaactc atggagttgg tcgatggaca 180
tctcttccca agaaagcagg tctaaaacga tctgggaaga gttgcagatt acgttggttt 240
aactatcttc gttcagatat caagcatgga aacatttctc cggaagaaga ggaactcctc 300
atcagattac atcgtctcct tggcaatcgt tggtcgttga tagcaggacg acttccagg 359

<210> 487
<211> 438
<212> DNA
<213> Pinus radiata

<400> 487
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ccatgggggt cattacccat gtaaaagaaa agtaagagat ggatcgggat aagcttatga 180
agatggctgg tgcagttcgt actggtggaa agggtacagt acgcagaaag aagaaagcag 240
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tgaatactat tcctgctatt gaagaagtaa atattttcaa ggatgagatg gtcattcatt 360
ttataaaccc aaaagttcaa gcctctatta atgccaatac atgggtggtc agtggatctc 420
cccagacaaa aaatttac 438

<210> 488
<211> 478
<212> DNA
<213> Pinus radiata

<400> 488
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cccacgcagt ttgaagggtg tcgcagcaga agaagatcgg attcgttcat cctcatcaca 120
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caatacatgg gtggtcagtg gatctcccca gacaaaaaat ttacaagatc tccttcccgg 420
aatcatcaat cagcttggac ctgataattt gattaatttg aagaagattg cccaacag 478

<210> 489
<211> 608
<212> DNA
<213> Pinus radiata

<400> 489
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ggctctgggt ttaaagttct gaattaaacg ggctttggct aaaaagtaaa aaacggttgg 120
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acagtgagca ggtggctgcc tcaacaaaca agaggttgat gctcacattc ctaactatcc 540
aaatcttcca ccacaattaa tctgccacta cacaatgtta ctctgcaggc agatgtggag 600
acagatga 608

<210> 490
<211> 331
<212> DNA
<213> Pinus radiata

<400> 490
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agtaagctat agattgatag ttcagagaaa agactgaaag gcaaaaacta tatagacata 120
acaacggaga gagcagcaca ggaaccaggt tgcataatgg ctaggcctca aagatacaga 180
ggagtccgtc agaggcactg gggatcatgg gtctctgaaa tccgccatcc cttattgaag 240
accagaatat ggctaggaac atttgaaaca gcagaggatg cagcacgagc atatgatgaa 300
gctgcaagga tgatgtgtgg gccgagagct a 331

<210> 491
<211> 431
<212> DNA
<213> Pinus radiata

<400> 491
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tcttctgtta agatggtgag atctccctgc tgcgacaagg ttcataccaa taacaaaggc 120
gcctggacca aagaagaaga cgagcgtctc atagcacaca ttgaagccca cggcgagggc 180
tcatggcgtt ctcttcccaa ggccgcaggg ctgctgcgat gtgggaagag ctgcaggttg 240
cgatggataa actacctgcg tcctgatctg aaacgcggaa gcttttcaga agaagaagac 300
gatctcatca tcaaactcca ctccctcctc ggcaacaagt ggtcgcttat tgcagggaga 360
ttgcagggcg aacggacaac gaaaataaaa aattactgga acacgcacat gaaaaggaaa 420
ttgttgagca g 431

<210> 492
<211> 469
<212> DNA
<213> Pinus radiata

<400> 492
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actacagaag aagaatatag aagatgggta gatccccttg ccccccaaaa gaagcgctta 120
accgtggggc ttggacaggc atggaggata cgattctcac cgagtacatt cgagttcatg 180
gcagtggtgg ctggaaagat atctccaaaa gagcaggtct taagaggtgt gcaaagagtt 240
gcagattgcg ttggctgaac tatcttcgtc ccgatattaa acgtggtaac atttctcccg 300
aggaagaaga gctcattatt cggttgcatc gccttcttgg aaatcggtgg tctctgatag 360
caggacgact gcctggtcga acagacaacg aaatcaagaa ttactggaac actcatatga 420
gcaagaagcc atggctgtca atggacgaat ctcagtccaa tacttcgca 469

<210> 493
<211> 380
<212> DNA
<213> Pinus radiata

<400> 493
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gacgaaaggt catgggaaac cttgcaggag gacgaggagg gtcttctcaa ctttgacaag 120
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gcttcaaaca ttcagcgagg attgatccgt tatctctaca tcatcatcga cttctctcgg 240
gcggcagcag agaaggattt caaaccaaat cgaatggtgg tggttgcaaa ttgtgtcgag 300
gcatttgtga gagaattctt tgatcagaat ccactaagtc agctgggtat tgttattata 360
aaaaatggcg ttgcacatcg 380

<210> 494
<211> 420
<212> DNA

<213> Pinus radiata

<400> 494
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atgaagcact cgttgcatat attcaagccc atggagaagg cagttggcgt tcccttccca 120
aggccgctgg gttgcagcgg tgtggcaaaa gctgcaggct tagatggata aattatctcc 180
gtcctgacct caaacggggc aatttcagcc cagaagaaga tgagatcatt atcaaacttc 240
attctatgtt gggtaacaag tggtctttga tcgcaagcaa attgccaggg cgaacagata 300
atgagataaa gaattactgg aacactcaca ttaagagaaa aatgttagaa aggggtctag 360
atccttctac ccatctccct ttaatgtcag accatggctc ttttgagtcc tccagcaaga 420

<210> 495
<211> 568
<212> DNA
<213> Pinus radiata

<400> 495
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tctgctcaca acaggatgga gtgtttttgt cagtgcgaag agacttgcag ctggtgattc 180
tgtgctcttt atttggaatg agaaaggaca actgttgttg ggaattagac gagcaaacag 240
gccacaggct gtaatgccct cattggtact ctcgagtgat agcatgcata tagggctcct 300
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ggcaagtcca tctgaatttg tcatacctct ggcaaagtat gttaaagcag tttatcatac 420
tcgtgtttct ataggaatgc gttttagaat gctatttgag acagaagagt cgagtgttcg 480
cagatatatg ggcaccataa ctggcataag tgacttggat caggttcgat ggccaaattc 540
acattggcgt tctgttaagg ttggttgg 568

<210> 496
<211> 396
<212> DNA
<213> Pinus radiata

<400> 496
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agaagaaaaa gcgtccagca atcttcagca gcccctgcta gcagatgcgt ttcgccggtc 120
aattctgtgg aagagcaggc attgtcttcg acctcctccc ctgtttcttc tcacgcagag 180
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gatctcctcc tgtttctgtc aaagtgtgta aacattaccc cggacaacct cagcaatatc 360
ctgatagccg cttctcaaac gaattgccgc gatgaa 396

<210> 497
<211> 643
<212> DNA
<213> Pinus radiata

<400> 497
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tgttaaacag aagaacttga aggatgggga ccaattcacc agtagtgatg aagctgacag 120
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caaaagaagt gggggggcaag gtgatggcaa tcagtacagg tcacgtcact ctcggagcat 240
ctccatggat agcattatga gtaagatgca taacttcagt gaagacttgg aacaggaacc 300
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tgagaaactg gcagagcttg caacggtgga tccaaaacgt gtcaaaagga tattggctaa 480
tcgccagtcg gctgcacgct ccaaggaaag aaagatgcgc tatatctcag agctggaacg 540
caaagtccag accttgcaaa ctgaggcaac aactttgtcc gcacagctga ctcttttgca 600
gagggatcaa ctggactggg cagtcagaac cacgagctca agt 643

<210> 498

<211> 328
<212> DNA
<213> Pinus radiata

<400> 498
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aatattttgc ttgtaggtcg aggcggcacg aatccgggtc aactgaggat acattctgga 120
ggtatagtgt ggagaaggca gggtggaggc aaggtggttg atgtggcgaa aaacgaagtc 180
aagagtttga gttggactcg agttcccagg ggttatcaac tcggtgtcaa gcttaaagct 240
gggttgaaca tcaagcttgc gggatttcgt gaacaggatg tcggcaattt gacaaatttc 300
atgacaaaca caataggatt agctccca 328

<210> 499
<211> 372
<212> DNA
<213> Pinus radiata

<400> 499
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tggtggagag agcagtcctc attctgacat agagtctacc ggcatccaca ataatggatc 120
ttcttcttcc tcacaatcca tcatacgaga gcaagaccgg ctgcttccca tagccaatgt 180
ggggcgcatc atgaagaaaa ccctcccaac caacgccaag atctccaagg aagccaagga 240
aatcatgcaa gaatgcgtct ccgagttcat tagctttgtt actggagaag catccgacaa 300
gtgtcacaag gaaaagcgca agaccatcaa cggcgatgac atactatggg ccatgaccac 360
tctcggattc ga 372

<210> 500
<211> 344
<212> DNA
<213> Pinus radiata

<400> 500
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gaaaataatg aacttaggag atgcacatgg caccagtgga gttgctgccg ttctcgagaa 120
ttcggatgat gaagctgtgg atccacatct tgaacgtatc aaaagtgcac gtgaaggcgg 180
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tgtagtcaaa gaactaatat gcacacatga ttaacaagag ttaaatcaag agactgatgt 300
ctgtttctgt tttgtttgtg tgcaggatga ggattttgtt gcag 344

<210> 501
<211> 462
<212> DNA
<213> Pinus radiata

<400> 501
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gatggggtgt gtgtcgtcca aggtggagaa tgaagaatta gtgaaaagat gcagggacag 120
gaggaggcta atgaagcagg cagtgaattc caggcacaat tttgctgcag cccacattgc 180
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cagtgctatg aatggcaatg ctattgaaga agcggccaca ccaatgccag cgaccccatt 300
aacagcatct catcgccatc ccatgaaatt ccatcctcct cctccgcctc cgccgccgcc 360
attggtgcct agcagcccct ccgtgagtcc cagcatggag agctttcgta tgccatccaa 420
acacaatccc ctcagtaggt ctacttcaga cattagctat gt 462

<210> 502
<211> 504
<212> DNA
<213> Pinus radiata

<400> 502
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ccaagaaagc agggctgcga agatgtggaa agagctgcag attgcgttgg ctaaactatc 240
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acaacgaaat aaagaactac tggaacacta acttgagcaa gaaacttgct gtcaggggaa 420
tcgatcccaa gactcataaa aaaatcacga cggacggcac gaacagagtc aacggtgatc 480
gtttcagcca gaggaaaggt gaga 504

<210> 503
<211> 416
<212> DNA
<213> Pinus radiata

<400> 503
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tgatccatgg caagagttct gtagcattgt gcggaaaatt tacatttata cgcgtgaaga 180
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ggcctgctaa aggggcatca aagggcatgt tttagttggc cgtttgatgc cttggg 416

<210> 504
<211> 1206
<212> DNA
<213> Pinus radiata

<400> 504
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accagc 1206

<210> 505
<211> 386
<212> DNA
<213> Pinus radiata

<400> 505
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tgactcttga tgagtatgag aaagtg                                         386

      <210> 506
      <211> 408
      <212> DNA
      <213> Pinus radiata

      <400> 506
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gtctcctgaa cggaggttta ctggtacaat tattggcatg ggtgaggttg ataatgtgag    120
atggccagaa tcaaagtgga gatcacttaa ggtccagtgg gatgaaacat cagtggtccc    180
gcgaccagag agggtttcac catgggaaat tgagacgttt gtagcttcat ctgcagcact    240
taatcctttg ccagcaccaa ggactaagaa gcctcggccc aatttggtgt cctcatctca    300
ggaattaatg atacatggat cgggcaaaac agcaacagat tcttcacagg tacacagatt    360
gccaagggtc ttgcaaggtc aagaaatgag gacctttgga ggatcctt                 408

      <210> 507
      <211> 320
      <212> DNA
      <213> Pinus radiata

      <400> 507
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atttctcccg aggaagaaga gctcattatt cggttgcatc gccttcttgg aaatcggtat    120
gtagagaatc gggggacatg atttattcat gcgccagaat ttcacgattc ctcatcgaat    180
tagtcatgca atgtttgtgc aggtggtctc tgatagcagg acgactgcct ggtcgaacag    240
acaacgaaat caagaattac tggaacactc atatgagcaa gaagccatgg ctgtcaatgg    300
acgaatctca gtccaatact                                                320

      <210> 508
      <211> 395
      <212> DNA
      <213> Pinus radiata

      <400> 508
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gtagatctcc ttgctgctcc aaagaggggc tcaaccgcgg ggcctggacc aaaagggagg    120
atatgattct ctccgaatac gttcgaattc atggcgatgg tggatggaga aatcttccgg    180
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atcgccttct tggcaatcgg tggtcactga tagcaggacg actgcctggt cgaacagaca    360
acgaaatcaa gaactactgg aacactcatc tgagc                               395

      <210> 509
      <211> 658
      <212> DNA
      <213> Pinus radiata

      <400> 509
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tcgctttctg aacaccaaaa agttagagga ctcgaaagca aatgtggata atggaaagac    120
accagaagga catactgcgc aggctgggag ttcttcaggt tctgaagttc tgcaatctga    180
aaatggaaat ggaaattcta cccaggagct acatggtgct tgtgggatgt caggctcaca    240
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tggagcatat cttaaccact atcaacatcc acatttccat atatcagctt ttcacccgct    360
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tcataaaatg aaacagattt tataaagtct tcgcaatttt atggttcaga ggccattatc    600
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<210> 510
<211> 351
<212> DNA
<213> Pinus radiata

<400> 510
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ctaagagact acagaagaag aatatagaag atgggtagat ccccttgccc cccaaaagaa 120
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<210> 511
<211> 754
<212> DNA
<213> Pinus radiata

<400> 511
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aaggctgaag atggagtgtt atatcctctt gaaaaaagct ttttcttctt gcctaaaccc 120
ccgacactta ttcttcacga ggagattgaa tatcttgagt ttgagagaca tggagctgct 180
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aggcaaccga gaccaagaag aagaagaagg gatgacgagg aagagggagg aaagaaaaag 660
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<210> 512
<211> 424
<212> DNA
<213> Pinus radiata

<400> 512
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gtcatattcc atgtttccca attcaggaat gggcttaaat ccctcagtga catcttcaga 180
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taaactgacg atcgatgaaa gaaagcagaa gagaatgctt tctaacagag aatctgcaag 300
gaggtccagg atgagaaagc aacagcattt ggatgaattg agagcccgaa cagctcatct 360
cagagcagag aacagtcata tgctaacaaa attcaacatt gcttcacaga aatacatgca 420
gctg 424

<210> 513
<211> 487
<212> DNA
<213> Pinus radiata

<400> 513
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ggggtgaggc gagttatgag acagcaaagt aatatgccat catcagtcat atctagtcac 180
agcatgcatt taggtgtcat tgctactgca tctcatgcag ttacaactcg gaccatgttt 240
actgtttatt ataaaccaag gacaagccaa tcagagttca ttattcctta tgataaatat 300

atggaggctg tgaatagcaa cctttcagtt ggaatgaggt ttaagatgag gttcgagggt 360
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attccac 487

<210> 514
<211> 648
<212> DNA
<213> Pinus radiata

<400> 514
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gaacgacatt atttcatgga acgaagacgg cactacgttc atcgtttggc ggcctgcgga 480
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gcagctgaat acatacggat ttcgaaagat tgtgccagac agatgggagt tcgccaacga 600
gtttttttcgc agaggagaaa agaaattgct ctgcgagatt catagaag 648

<210> 515
<211> 315
<212> DNA
<213> Pinus radiata

<400> 515
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tatatataga gagagagaaa tatacgtttt tcagatttaa gcatggccgt ttaataatct 120
gcattgcatg gcgagattgt atttgtgtta gaagttgatt ttctgttttt tctctttcag 180
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acaagggagc atggtctgcc gaagaggata gtcttctggg aagatatatt caaactcatg 300
gtgaaggcaa ttgga 315

<210> 516
<211> 563
<212> DNA
<213> Pinus radiata

<400> 516
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taacatgggt gtgtctggag gtctagatga aagtgggttt tcacagcctc caccaaattt 120
tgcaaagatg aatgctccca cgagaacatt cactaaggtt tacaagctag gttctgttgg 180
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ggagttttgg agttccattc caactcagca gcagacaagc agtagttcag acgactgtgt 480
agctagaaat tcttctcgca acatcagatc agttctcaca tcgcctggct ccctggacgt 540
attaagtgta gatccaattg tac 563

<210> 517
<211> 392
<212> DNA
<213> Pinus radiata

<400> 517
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aaacggttat gccatcatca gtgctgtcca gtgatagcat gcacataggt gttcttgcgg    240
ctgcagctca tgctgcttca acaaactgcc gcttcactat tttctacaat ccaagggcaa    300
gtccatcaga atttgtcata ccattgtcta agtatgaaaa ggcagtttat cacacacgag    360
tttcaattgg aatgcgcttc cggatgctgt tt                                  392

      <210> 518
      <211> 319
      <212> DNA
      <213> Pinus radiata

      <400> 518
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gtctctctgg caagatgggg agaactccct gctgtgaaaa aggtcataca aacaaaggcg    120
cgtggaccaa agaagaggac gatcgcctca tcgctcacat tcgagcccac ggcgaaggcc    180
gctggcgttc gcttcccaag gccgcagggc tgatgcgatg cgggaagagt tgcaggctcc    240
gatggataaa ctacttgcgt ccacatctca agcgtggaaa cttctcagaa gaagaagatg    300
agttcatcat caaactcca                                                 319

      <210> 519
      <211> 513
      <212> DNA
      <213> Pinus radiata

      <400> 519
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cagcaacagg gcaccatggg ccgagctcct tgctgggata aaatgggagt aaagaaaggc    120
gcctggactc tagacgaaga taaaatactc gtcgattaca ttaccaaaca tggccatggc    180
aactggcgcg cactgcccaa gcaagcaggg ctcctgcgat gtggaaagag ttgtcgcctg    240
cggtggacga actacctgaa acccgacatc aaaagaggga attttagtcc agaagaggaa    300
gatcaaatta ttaaattgca tgagctcata gggaatagat ggtccactat tgcttcgtac    360
ttgccaggaa gaaccgacaa tgagatcaag aacgtgtgga acacccattt aaagaaacgt    420
ctcgcgcgta tgaaagccga ctcggttgca gtcgacgcac agccaacgcc tgcgtcttcc    480
ctggcctcat ccactacaga aatgacgtgc cac                                 513

      <210> 520
      <211> 219
      <212> DNA
      <213> Pinus radiata

      <400> 520
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gcagcgatgc gggaagagct gcaggctgcg atggataaat tacctgcgtc ccgatgatgt    120
caagcgtgga aatttcacag aagaagaaga cgatcttata atcaaactgc actcactcct    180
cggcaacaag tggtctctaa ttgcagggag attgccagg                           219

      <210> 521
      <211> 392
      <212> DNA
      <213> Pinus radiata

      <400> 521
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gagattgcgc tgtgagaagg gtaatacaaa caaagggcg tggacccaac aagaagatgc     120
ccgactcatc gcctacattc gagcccacgg cgaaggcggc tggcattccc ttcccagggc    180
cgcaggtctg ctgcgatgtg ggaagagttg caggctgcga tggataaatt acctgcgtcc    240
taatctgaag cgtggaaact tctctgaaga agaggacgat ctcataatca aactccacaa    300
cctcttgggc gataagtggt ctcttatcgc gggtcgattg ccgggccgga tggaagacca    360
gataaagaac tattgggata cccactttaa ga                                  392

      <210> 522
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<211> 447
<212> DNA
<213> Pinus radiata

<400> 522
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atatgagcca cctgcagtaa gctgtgatca ggagaaacct ttgcaaaagt tatcaaaaga 120
aactcaagtc aaacagcacg gcaaccccac caggagctgt actaaggtgc ataagcaggg 180
gatagctctt ggaagggccg ttgaccttac taagtttgaa ggttacgagg aattaatttg 240
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ggttgtgtac acggataatg aaggagatat gatgcttgtt ggtgatgatc catggcagga 360
gttctgtagc attgtgcgta agattttcat ctatacacga gaagaggttg agaaaatgac 420
tcctcaaaag catgccaaac tgcaagg 447

<210> 523
<211> 822
<212> DNA
<213> Pinus radiata

<400> 523
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tctacatttt cagtcacagg gattcgatgg gcatggtcct tcagttgctt aaaggggccg 360
gattgaatgt tattactgcg gaggaccaag agtttttaac ggcggaatcc attgctgcaa 420
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tcttacagca ccagaaggag gcattggctt ggatggtgca gagggagaat tcttccgaac 600
ttccgccatt ttgggatgtt tgtgacaaga cgagtaagtc acagcagctc agatataaaa 660
atgttttgac aaattttgag acgaatggaa ggccgaagcc tttgagaggt ggaattttgg 720
cggatgatat ggggcttggt aagacgctgt cattgctttc gctcattgca acgaaccgtc 780
ccggtgccaa gctccctcct gttgtagata ttgctccctc tt 822

<210> 524
<211> 390
<212> DNA
<213> Pinus radiata

<400> 524
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gcgtcgccaa atgtggagaa accccagaga gtccggacag agccattccc agcctccaga 180
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aactgtcgag caagccgccc gtgcttacga tgccgcactc tattgcctca gaggaccaaa 360
cgccaaattc aatttcccca attccgtgcc 390

<210> 525
<211> 299
<212> DNA
<213> Pinus radiata

<400> 525
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tgccacggca gatgacaaga gacttcaaag taccttgaaa agaataggcg tgaataacat 180
ccctgctatt gaagaagtca atatttttaa ggatgaccat gttattcatt ttgctaaccc 240
aaaggtccag gcttctattg ctgccaacac atgggtgggt agtgggcatc gcaaacaaa 299

<210> 526
<211> 101
<212> DNA
<213> Pinus radiata

<400> 526
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gcgccgcaac gggctgctga agaaagctta cgagctctcg g 101

<210> 527
<211> 361
<212> DNA
<213> Pinus radiata

<400> 527
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gccaacggtg acagaagcaa gggagcctgg accaaggaag aggatgacag gcttacccaa 120
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aagtggtctc tgatagcggg tcgtttgcct ggtcgaactg gccaccaaaa tcaaaactac 360
t 361

<210> 528
<211> 337
<212> DNA
<213> Pinus radiata

<400> 528
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ggaggatttt ctgttttacg aaggcatgct gatgaatgtc ttccacctct ggacatgagt 120
cagcaacctc cttcgcaaga gctggtagcc agagatttgc atggaatgga atggcgattc 180
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gaactgcgtg ttggagtgag gcgtgctatg cgtcaga 337

<210> 529
<211> 491
<212> DNA
<213> Pinus radiata

<400> 529
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gttgaaggat gttaatgcgg gcagcgtgaa agagcttttt gaacttggat gagtatggca 480
gatcgtttcc t 491

<210> 530
<211> 350
<212> DNA
<213> Pinus radiata

<400> 530
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agcgcctcta ttcagactgt tgtatgcatc cctctcgcgg acggtgtctt ggagtttgga 180

actactgaag tggagcgaga agaccctggt ctagtccaac gcaccataag cttttttttg 240
gagtacccca aaccgatatg ttcagagcaa tctacatcca gcccacagtg ctcagacaga 300
gacgaaaagg atcaagtggg catggtcaca ataatgtcct ccgacagcat 350

<210> 531
<211> 437
<212> DNA
<213> Pinus radiata

<400> 531
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cctgagcttt gaaaaac 437

<210> 532
<211> 508
<212> DNA
<213> Pinus radiata

<400> 532
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tcacctcaca cacttgtggt gatcaccc 508

<210> 533
<211> 374
<212> DNA
<213> Pinus radiata

<400> 533
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gtttgatggt gatcttggtt ttgctggttt tgacatgccc acggtctctg atgacgcaac 180
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catggaagat acga 374

<210> 534
<211> 487
<212> DNA
<213> Pinus radiata

<400> 534
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agtatgt 487

<210> 535
<211> 372
<212> DNA
<213> Pinus radiata

<400> 535
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atggacaggg atcatcattt gcagcatcat cgagtcgtaa ttcaagcttt tcaaatggat 120
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gccctgtatg taaggctttg gtggaagagg acaaaattgt tcccttgtat gggcgtggga 360
aggtgggttc tc 372

<210> 536
<211> 836
<212> DNA
<213> Pinus radiata

<400> 536
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tccaaatggg atagacattg ccacaattgc aagtttcatg gaggagcgac atgaattgcc 600
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tataaagatt cgcaatagtt acaagctcaa agatatgaca tctacagaag tgacatctga 720
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<210> 537
<211> 478
<212> DNA
<213> Pinus radiata

<400> 537
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cagatgtaga aactcttctt cctcaggttg atgaaacagc ttctgctgat ctgacagtgt 120
tcccaggttt tgttacccct tatgtaccat acgggttccc catatggcac acttttagac 180
ccacaataac tcaaacttcc aatgtttata agccaacagc tgtaatgcca actgctccaa 240
taaaaatgga cgaatgcaca gggttatccc agttaagcct cggcggtgtt gcagcggctt 300
ctgcaatgaa accctcagaa ctgtcactca aattacatgg aagacccccc tctagacaat 360
cagcttttca ggccaaacca tctctcaatg aaagcagtag tttgagttcc agcagcaatg 420
tcatcagtgt agtctgaatt gcaaggaaaa gcaggtgtga agaagatgat ggtatgga 478

<210> 538
<211> 565
<212> DNA
<213> Pinus radiata

<400> 538
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atcctgcaat gtatccacat ggaggaatct atgcacatcc ttccatgcct ccgggtgcac 120
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cacttccaaa tgctgaagca gaagccaagt cctcggaagg caaagagcgg aatacaatga 240
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gcaaggcaac atcgggatct gcaaatgagg ccatgtcaca aagtggggac agtggcagtg 360
acggttcaag cgaaggaagc gaggaatata acactcaaac tgagtcacaa gtggcgagaa 420
agagaagttt tgatcaaatg atagtagatg gagccaatgc tcagagtacc aatattcaat 480
catataattc ccaggctgga gaaccctatg tgacttccgg cgggcatgca atgggtaatc 540
ccattagtca agctgttgct gcagt 565

<210> 539
<211> 350
<212> DNA
<213> Pinus radiata

<400> 539
gggaaagtca ccgccagtgg gaaggtaact tctggagtta atgatttatt ttgggaacag 60
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gagactagaa ctaaggatca agatgaaagg ttgcctgaga atgggaagtg ttggagcaac 180
aagcagacat tggatcaact tacagaacag atggggcagc tggcatcagg gacgcaaact 240
tgaaataaga ttatagaggc tgctagtagg tgcatatcac tgtcagttct gctaaaattt 300
ctggttagca atggtcactg tttatgtgtc ctaatgaatt gctccaaata 350

<210> 540
<211> 479
<212> DNA
<213> Pinus radiata

<400> 540
catatcattc atatgaatat ggatagcagg caatcagggg aagaggaaga ctgcaacgtc 60
actcggccag gaggaggagg aggaatatca ttacatgtta gcagcgtgga atattgccag 120
aagagtgctt gtgttgccca tgatatctct tctgatgaac aagatctgat aaatagactt 180
cacaatcttc tgggcgacag gtgggcactg attgcggggc gccttccatg gagaagaaga 240
gaggagattg agaattactg taaaatgaga tacacagcca ctacctcttc ttcacgctct 300
tgaatctccc tttctctcgc caggttatgg agtgtggacc aactatcgta atcagatagt 360
ttgggttgat tcagattgtt taggtttatc tccacttgaa aatatgtgtg gatatttgtt 420
tgtttgtttt atcaaaacca agtatagaag aaataaaatt tgatcgtttt atcgattta 479

<210> 541
<211> 580
<212> DNA
<213> Pinus radiata

<400> 541
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tcctaatgta tcgaaaatgg acaaagcttc tctgctcggc gatgctgctg cttatatcaa 180
agatctcttt tccaaacagc aggatttgga gtccgagagg gttgatatgc aggttcaaat 240
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tcctgttgcg agactgatga tagcactgca agaacttgat ttggaagttc tccatgcaag 480
tatttctact gtgaaggatt ccttaattat ccagacagtc attgttaaaa tgaccagagg 540
tttgtacacg gaagaccaac ttcacgccct gctttgtaag 580

<210> 542
<211> 445
<212> DNA
<213> Pinus radiata

<400> 542

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tttcaacctt gtagaaccta attgagtaaa acttcattca gttggattct catcgttttc 180
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ggcaatggca actacattag agagcaggat cgcctgctcc ccatagcgaa cgtggggcgg 360
ataatgaaac gggcgctgcc ggggaatgcg aaaatctcca aagacgcgaa ggagacggtg 420
caggaatgtg tgtcggagtt catca 445

<210> 543
<211> 682
<212> DNA
<213> Pinus radiata

<400> 543
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ataacaacaa caatcatgac gaaatattgc cttcgtcggt gaagcttcaa gggcggcaga 180
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ttataatttg caggttccat ggccacgcgg aatccctttg acctgcttga ggatgatgat 300
aatggcgacc cgtcgtcatt gctggacacc ctcgctgctg caaaggacaa gccggcggca 360
gtggctgcca agaaacagca gccagcagtg tcggcgagcg gaaaactgcc gacgaaaccc 420
cttcccccgg cccaggctgt taaggaatcg agggtttctc caaatgaggg gggcagggga 480
cgaggtggcg gtcgaggcgg ccgtggattt ggcaacagag aatcgcagga gtttggacgt 540
ggccgtgggg gaggttataa tgttgaacgg aacttcaacc gcgagaacaa tgcctattcg 600
ggttctcgtg ttgggttcta tgacaacaat tctgatttga tccccagccg caatgaggat 660
ggagatggag cttcgaacga tc 682

<210> 544
<211> 372
<212> DNA
<213> Pinus radiata

<400> 544
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cacttctatc atgttattct tattccgagc tactgtcagc tatatgatgg acctgtgttt 120
tcatcactgg ctcacttcac ctgtttgagt atctgccatt tttggatgtt tgtgtaagct 180
tggctaaata ccagagacac aaagaaaccg tcctgtagcc ggagttatcg aaactattta 240
caatgccacg ggtgaaatta atttccagga acttcatgga catggtggca gcattaccgg 300
ctgcaaagtt agatcggctt tatgataagt cattgcattt gcgaagcggg ctgaggtctc 360
tgactcctgt gc 372

<210> 545
<211> 444
<212> DNA
<213> Pinus radiata

<400> 545
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aaagtatcgg aaaaggacgc aagcatagcc ctatgttgtt tgtccgagtc aaatgaagca 120
ctgggattcg aatctttgat cacaaaatgg caaattatac ctttaagcat gcaggcccag 180
ctcattattt tcactctacg aattccgttt actatttcat gaaccgggca tttatgggct 240
acaagcgact tttattataa ggcttctttc ttctctttga ctttcatata gctgacatga 300
atggcagaag agatggacac accgacaaaa acaacaaaga cgcctacatc acaggaacaa 360
acttccacaa gcactcccgt ggcttatcct gagtgggctg caccaataca ggctctatat 420
aattctggaa agacaccact ccct 444

<210> 546
<211> 570
<212> DNA
<213> Pinus radiata

<400> 546
tcgttctcaa gcaccaggga gagcatggaa aggcgagatc agagtccggt tgcagctcgc 60
caccccatga gaaaacacta cagaggagtt cggcagaggc aatggggcaa atgggtagcc 120
gagattcgcc tccctcagaa tcgaacccgg ctctggctcg gcacctttga caccgcagaa 180
gcagcagctc tagcatatga ccgagctgct tacagatggc ggggtgagtg cgctcggctt 240
aatttccccc atttgttctc aaaaaagtat cagaattcct ctcccagctc caccaatggc 300
aggattcctc gcctttcttg tgaaaaatct gatcagaaat atgcatataa tggtgaccca 360
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gttcctatag atgtatatag gagtgaccca gttcgggtaa gtgcatatac tggtgaccca 480
gttcggataa gtgcttatag tggtgatcca gttggcaata ccgttacttt agcggaatcc 540
gagcttgaaa gctcctgcag ccatgaatcc 570

<210> 547
<211> 532
<212> DNA
<213> Pinus radiata

<400> 547
cttgattata tggaagaaca aaattgggat ataaatggag caaaatatga tggttcagaa 60
aagtggaaag ctcatagtag tgaacaaaag gatcttggta caataccaac aaaggtggaa 120
ggaaggattg gcaatagaga gaatagttta gatgtcacac gtggtggggc tctttgggac 180
atttttcgga gagaggacat accaaagtta caggattatt tattaaagca ctgtcaagac 240
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ttttacttga atgaaggtca taaaaagaaa ttgaaggagg aataccaagt agaaccatgg 360
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agaaacttga agtcctgtat aaaagtggct ttgaactttg tttcacctga aaatttacaa 480
gaatgcattc gtttagagga tgagttgcgc ttgcttccaa agaatcacag gg 532

<210> 548
<211> 447
<212> DNA
<213> Pinus radiata

<400> 548
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ccacggctgc cgaccaggag ctcaggaaga aagtgctgcg ggatctgcac gcgctgatta 120
atcccaacgc gactggagag gcggatccgg cggagtttcc aggggatgat gctactgtag 180
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cagaaaagct tcagagctac aactgtgagc gggctcgtca ggctcagcaa ttcggcattc 360
aaaccatggt atgtattcca acacctaatg gagttgttga gttgggttcc acggatttaa 420
atccgcagaa ctgggatttg atacaga 447

<210> 549
<211> 1163
<212> DNA
<213> Pinus radiata

<400> 549
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atattagcgg tttctattcc tgcggaaggc agcagcagct ggtttgaaag cagcagcagc 120
tgttttggaa acaaaacaat gtgtggaggt gccattatca aggaattcat tccggccaat 180
cgatctcggc gtgtaactgc tagggagctg tggccggatt tcgacacgtt cgctgaattc 240
atcaatggcg gagcaacgca agaaacattc aataaacctg gcaagttgga cgagggatgc 300
aagcagaaga gtaagcccag caagggttct gtcaagaccc agcaggaatt ttgttccggg 360
tttgaaggtg ggagaagtga ggtgattcct cctttggaag atgtggaagg gtccacaccc 420
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ttgtcaggaa agaaaggaaa gttgtgctca aaacaccctg ctttgttgtt agagggtttc 720
aatgcaagct gtaaggtaaa accctcatat tcagcaaatc ctgatttatt agggggttac 780
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ggttattttg attctgacca tagcagcatg tcatttgaag ggcgcatttt cccatgggct 1140
caagaaataa agacgccaga agt 1163

<210> 550
<211> 545
<212> DNA
<213> Pinus radiata

<400> 550
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tgggcagagg agggattttg gcagatgcca tggggcttgg taagactgtc atgacaatat 180
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tgggaccatc acagtacacc aacaaaacac aaggcacaag tatgctaagg agatcaagca 360
gtgggttaca taaaggaggc gggaatctta tagtatgtcc tatgacatta ttaagtcaat 420
ggaagacaga acttgagacc catgtacagt ctggaaccat gtccgtgtat gttcattatg 480
gacaaagtag aacaaaggat gttaaaagtc ttttgcagca tgatgttgtc ttgaccactt 540
atggg 545

<210> 551
<211> 353
<212> DNA
<213> Pinus radiata

<400> 551
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tcatcgatat cataatctct acctctatct ccatcggggc ttcgttgcct ctgtatgttt 180
gtaggtatga tgtccgaagt tggcagccca acaagccagg acagccgcaa ctctgaggat 240
ggagaaaggg agaactgtgc tgtgagagag caagataggt tcatgcccat tgctaatgtc 300
attaggataa tgaggaaagt tctacccacc catgcaaaga tttctgatga tgc 353

<210> 552
<211> 448
<212> DNA
<213> Pinus radiata

<400> 552
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cagacgagag gaggaggagg aggtgcgaag atgacgcagc atcaggtggt aactacggag 120
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cgcaaagatg atattcgact tcaaccagca atcatggttc ttatgctctc tgtgaagaat 360
gcttgtcgaa gtggttggtt tcgtgtcacg gacacagatg aactgctaac catgtcaaag 420
gagctgtcaa gtcgctttac gagtacgg 448

<210> 553
<211> 883
<212> DNA
<213> Pinus radiata

<400> 553

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agctgcagca ccacgcggtt ttggattctc cctgttcttt gttctgttgc gttaaagatt 120
ggttgcaggt cgaatcgccc aggccgattt gaattctcct gaggattgac aagatgacgc 180
gcaagtgctc gcactgtggc aacaacgggc ataactccag gacgtgccct aaccgcggcg 240
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cgtcttgggc aaagatccca aaaattggat ttgcaatcaa tcatgattca taattgttct 780
gaaaattatg ctaagaacta atctcatctt tcaaacctca aatggtattc ttttgtttga 840
agttgtttct aagtttcttt aatgtctatt cataatttca ttt 883

<210> 554
<211> 310
<212> DNA
<213> Pinus radiata

<400> 554
gtgagttcta ggcatgagtt tgcagtatcg caaatggcct acttacaagc tttgaggaat 60
gctggcgcaa cccttagaca atttgcagaa ttagaatcaa tggagcttca gaagacttca 120
ccttacccac atcttcgcca ttatcgggtc accttgcccc cttcacctcc tcctcttccc 180
ccacctccac cacctcctcc tccattgtct ctcacccctt ctcctagtta tggatctgca 240
acttttcctt ccagcatccc agtcaatcga agcatctaca gatgtccgta tcagcaatgc 300
tcaccatcat 310

<210> 555
<211> 463
<212> DNA
<213> Pinus radiata

<400> 555
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agataacatc atggaatctg agctgcaatt ttgttgcctc tactttgcag ggtcgtgaat 120
gtattgagcg cctggagatt acagggattg gagatccatc aggacgggga cttggtttta 180
gttatcttcg agttgctcca aagccaccaa tatcgagtgc tttggttaaa aaaaaggcag 240
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tgactaggtg gcatcggatt gcaatggtga gaaagctttc aagtgagcaa gctgcttcag 420
gcgttaaagt agatgcaaca gcattgaata agtttgcacg ggg 463

<210> 556
<211> 496
<212> DNA
<213> Pinus radiata

<400> 556
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ctgtggagcg gatcgctcgc cgtttgagtc gggtcgcaaa cgggcaattt gcgatgtgga 120
atgtgcagaa ctgtggaagt agggttaatg gaagacaatt gtgcttctga tgatcgggag 180
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ctaatcttcc ttatca 496

<210> 557

<211> 642
<212> DNA
<213> Pinus radiata

<400> 557
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gaaattagaa ccttcattaa ctccagtggc agtgaatcct ctgccagtag ccaggggcaa 120
gaggcctcgg ccaaatatat taccttcatc ttccgattta tcagtgcatg acaaggcccc 180
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tcaacctgtg gggaagtgc aagaattccg tggttcatta acaaatagta tcctggaaga 480
tggccagcag ccaaagcttt caagaaaaca gtttcaggac caagagggta aaattgtgga 540
tggatcagga ctgtggtcaa tgagttttcc aaacagctta caattgtgcg agtcaaatag 600
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<210> 558
<211> 653
<212> DNA
<213> Pinus radiata

<400> 558
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aaaatccgcc agaggaacca gagaaatgac cttaaataat attcaaacag gccttccagg 600
tctattccaa gcactgagta gtttttcaag tgtgtgtgca agttcctttg agg 653

<210> 559
<211> 100
<212> DNA
<213> Pinus radiata

<400> 559
atggctatgg gggaggcgga gcggatcacg gggccatgga gtcccgagga ggacacatcg 60
ctgcacaagc tggtggagaa atctgggcca cggaactggt 100

<210> 560
<211> 385
<212> DNA
<213> Pinus radiata

<400> 560
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gggagttctc aaatgagttt tttcgcaagg gagaaaagca gctactttct gaaatacaca 180
gaagaaaagg tctaatacaa cctcctccac cacctgagaa cagatccatt tcaccgtcta 240
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atgcccttag ccataagaat gcaattgaag aaaatgagaa actgagaaag gaaaatctgt 360
tattggtatc tgagctgaca caaat 385

<210> 561
<211> 328
<212> DNA

<213> Pinus radiata

<400> 561
cccacatgga ctgcagcacc attcctccga tgatgctaat ggcgatggcg ataagagaat 60
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catatctctg cctcctaagg gcagtcgtgt tgtgtacttt ccccagggtc acctggagca 180
gattgcagac aatgagcttc acaggggtgg ccgtggctcc ttcctcaaca tcaaccatgc 240
ggctgcaccg atggcagagg aagcatcttc tgcagcagcc ttgaatatac cgccatcgtt 300
cataagtcag ccgtgaacca acagatgc 328

<210> 562
<211> 440
<212> DNA
<213> Pinus radiata

<400> 562
aggaaacgct cacgctctta aagattagat cagaaatgga ttctaagttc cgcgaagcca 60
cccacaaagg tcccttatgg gacgaagtct caagggctct tgcggagcac ggttaccaga 120
gaagttccaa gaagtgccgg gagaaattcg agaatcttta caaatactac aagaaaacaa 180
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ctttgtacgg aggaacaact attgatgctg ccgacagttg ttttggcgta acaacacgga 300
caaatttaac cgaaagtcca ggcctggact ttaacggaga cggagcctcg cagaaatacg 360
ctgacactca ccacaacagc gagggcttta gtttgtcttc ggattcttct tcggatgacg 420
agtacagtca cgatatacag 440

<210> 563
<211> 359
<212> DNA
<213> Pinus radiata

<400> 563
ggaaagtcga acatagaaat cttctgtgca ttcatagaat aaatattcta caggctgcac 60
tgtaatttag gcgagaaatc gaataaaata tacatttgtt tgtttacgat ggagttggca 120
gatgagcatt ccatcctccg ctataagaaa cccaagctct ccaagaatgt cgtttccgag 180
cgccgccgaa ggcagaaaat gaacaagctt ctctacactc tgagggctct ggttcccaat 240
atttccaaga tggacaaggc atcgatttta gcggacgcca tcgaatatgt ggagaagctg 300
aagcaacagg tggagagagc tgagtctgac gttcaatcca ccaacgtctc ggctctatc 359

<210> 564
<211> 249
<212> DNA
<213> Pinus radiata

<400> 564
agggaattca acatcaatgc tgatgtctat gcacaggatt ccattgagtt gttgaagcag 60
agtgggattg atttcgagaa gaatgaggag aagggtatcg attcgcatcg tttcggcgag 120
cttctcatgt catcgggcgt tgtgttgaac gaaaatgtga attggattac cttccacagt 180
ggatatgact ttgggtacct gttgaaattg ctgacatgcc agaacctgcc ccccgaggaa 240
tcggatttc 249

<210> 565
<211> 542
<212> DNA
<213> Pinus radiata

<400> 565
agaaggttgg aatggcttag tccgctcatt tgatggcgaa cagatctttg tggggaggtt 60
cagactttga ttatgagaac gaagccgata cgaggaaggg tccatggact gtggaagagg 120
acatgcagct tggtattgta aatttgcacg gagaaggacg ctggaacttt ctcgccagag 180
catctggcct ccagagaact ggtaagagct gccggctaag gtgggttaac tatctccggc 240
ctgatctcaa gcggagcaag atcactcctg aagaagaacg tttgattatt gaactccatc 300

gccgttgggg aaataggtgg tctcgtattg cacaaagttt accgggaagg acggacaatg 360
aaatcaagaa tttctggaga actcgtatga agggaaaact aaactcagaa actcagaagg 420
acatcgccgg cgtggatgca gacgacggag tacagtttga aagcgaattg ggatcttgcc 480
gcctcccagt tatttcatcc catgcactgc ctgaagtaga cgttgcagag ccttcgagta 540
ct 542

<210> 566
<211> 358
<212> DNA
<213> Pinus radiata

<400> 566
gggacagtag ggaggaagag aagacgaatt catcgatcca gtattggtgt aactggtggc 60
agaggactac ggcatttcag catgaaagtt tgtaagaaag tggagagcaa gggctggaca 120
acatacaacg aggttgcatc tgaattagtg gccgaatttg tgaatccaaa cagcacacat 180
ctttcacaag atcagcaaca gtttgatgag aagaacatta ggaggagggt gtatgatgca 240
ctgaacgtac tgatggccat ggacataata tcaaaggaga aaaaggagat tagatggaaa 300
gggctaccta caacaaatct aagtgacatt gaacggctaa agactgagcg aaagaggt 358

<210> 567
<211> 722
<212> DNA
<213> Pinus radiata

<400> 567
atgcccccga gcatttgcca gggcttacaa cttgaagacg cacatggcca ctcatgaccc 60
caaccgtctt aaacctcatg tgtgccctca ccgctcgtgt gcgcggtcat ttagccgcaa 120
gcatgacctc gggcgtcact tggtcagcat tcatcgtgac gattccgtgg tttctacgcc 180
ctctgcgtca atgaagtcta ttggtgtcga cagtggccgc aggagttggt gtgacaactg 240
cggcaaagga acaatcggcg catcgtgcca gtgttcatgc gccgatatca agtagttgcg 300
gatcgcgttg ctctgtttaa acactatgcg tatatgccat gggcgagtat atttcgccac 360
tcgcttcgtc gcagtcgatg gttgattcgt ccactgcgtt cttctgacgt atcattcctc 420
tatctgcgct atttccgacg tgttgcgtat cgtaccgttc agccatagat gctgaaccca 480
gtgacgaacg cgatcgcgag ttgcctcatt tattcgtgac ccaccacggg ctggacacta 540
tttgtctaac tatctcgctg ggatacttta tctgttgtta actccttatt caacgattct 600
tatgagccct tcgtaactta gcagatccca ttttccttaa cttttcatta tattttggaa 660
ggcgcatcgg cgtgattcca ccaatactgg aaataccatt atttatgcat ccaaaaaaaa 720
aa 722

<210> 568
<211> 489
<212> DNA
<213> Pinus radiata

<400> 568
ccacgctcca attttctgta gagtcgcgag gaatttccaa ctgagggtta ttctgaagga 60
aaacaggcgc cgggagacat ttgatgggtt cttgagagag gaccacgaga aagtatccca 120
actggtcact cagcactaca aggtccagct cgagaccaag gaaatcagcg tcaagggatg 180
gaactgggga tctactgatg ttcaaggcaa cgatctcgca tttgtcgttg caaacaggac 240
cgcctttgaa gttcctctcc gatcaatcac caactcgaac atcgctggaa ggacagaagt 300
ctctctggag tttagcacgg cgcccgcccc atcagctagc aaatccaaaa agggccgccc 360
agacgaattg acagaaattc gattctatgt ccctggcacg cataccaagg acgatgacga 420
cgaggctgat atcaccaaag atgacgagga ggtttctgcg gctcaggcgt tccatgacat 480
gatcaagga 489

<210> 569
<211> 490
<212> DNA
<213> Pinus radiata

<400> 569

ggttctggtg gcgtgaaaat ggaggatcat tctcctgtca tcatcaactc tcagtcaggt 60
tattgccagt cccagcagtc atcacagatg cctttagctg gctacatgtc acctcatggt 120
attcccattc agcacactga cgatgccgcc tcgaaagaga ctcagtacct tcgccggagg 180
tgcttcaatt gccacaccac tgagccaccg agttggagga gatcgacact cacccccggg 240
aagattgttt gcaacaagtg tggtctttat gagcgcactc atttgcgacc tcgtcctctt 300
cgttttgatg aactgagagc aggcaacaag tcgcgaaagc aaacaaagtc aagtcccaag 360
ggcgcaaagg tcatcccccc ggggcccctt cctatcaaga aggagcctgc tgagatggag 420
gcgatctcgc ggaggatgtc tgtttcatcc agctcttccg cccaatccgg tggtggtggg 480
tcgagtgact 490

<210> 570
<211> 447
<212> DNA
<213> Pinus radiata

<400> 570
aagaaaccta cttggggcaa gagctcagcc catgaaactt tctgctaaaa atgattcaaa 60
actgggtatt gcaaggcctg ccaagctcta cagaggagtg agacagaggc actgggggaa 120
atgggtagca gagatcagat tacctaggaa tagaaccagg ctctggcttg gaacttttga 180
cacagcagaa gaagcagcgt ttgcatatga cacagcagcc taccaactac gtggtgagta 240
cgcaaggctt aattttccgg acttgaggta tcttttgctc tcaaattcgg ataacggtag 300
ccataatgtt ctttcgccac cgggtaatgc gttatctgtg ctgaaatctt ctgttgatgc 360
aaagctccag gcaatttgcc agcgtttatc ccaggaaaat tcttcagaaa atcgtctgat 420
ggcacacagt gccaacaatg aagctct 447

<210> 571
<211> 146
<212> DNA
<213> Pinus radiata

<400> 571
cgtttctgga agccctagaa aagagagaag aggatagaat gatgagggaa gaggcctgga 60
aaaggcagga aatggcgaga ttgaacaagg atcaagaatt aaggtctcag gaacgttcta 120
tggctgcttc aagggatttg gcatta 146

<210> 572
<211> 767
<212> DNA
<213> Pinus radiata

<400> 572
gtcgccctgt caaataatcc cttgatcttc agcgctaagg ttgaaaatgg tactcctagc 60
tatgatggtc tgaagcatgc taatacgaat cctatgccat tttctgggtt gggtaatgtt 120
tccatgggcc ctttgtttta tcaagcaaat ccaatccagc gagtcaagag agttagggac 180
actagtttca tcatgggacc cccttccagc cctttcggtc gcatgggtgt gaatggtcac 240
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cccctccaag ctgctagatc ggattcattc gttgctcaag gctgctttcc ctatgacccct 360
aatctcagca gcactagtaa tttgcccctg ggagggtttt catcaggcag ccatgccgtt 420
atgaatggta ctttctcttc ttctaggctt ttttctggcc agaagctgga gctcccttca 480
agccaatttg ctgagtctgt gcagactgca ggctcaagca tcaatccagt tttaaatagg 540
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ttctctacgc caaaaaatag tgggttgtta gaatctatgt tccaagaagc tcaaacaatg 660
ggtggggtta aggctcattc ctcctcaaat tcctcgattg acctgcaggg gggctccaaa 720
agcagtatca gtaacccact gaacaatggg ttcctatgca gatcaag 767

<210> 573
<211> 445
<212> DNA
<213> Pinus radiata

<400> 573

gaatcaggat ggaggagcct ctgcaaatta taaattcatc tccgatacag cagcagcatg 60
atcatgatga tgatgatcat gggcatgggc atgaggagga ggtaattccc caccctctgc 120
ttccccctcc tggcgacact tgtattgttc catacatcat gcccgtttcc acctctaccg 180
cagaaaaaca ccctccccag ccaaccaata tcgcctttaa cggcccggaa acagaggaag 240
acgacaagaa acgggataga gagcacaaga agcggtccaa gaactggacc agggtcgaaa 300
ccctcaagct tataaagctt cgaacagaat ttgagcccag gttttctcgc agcggaagaa 360
agacggaact ctgggacgaa atagctgagt ctctgcgaaa agaacagttt ttcagggacg 420
cccagcagtg cagagacaaa tggga 445

<210> 574
<211> 731
<212> DNA
<213> Pinus radiata

<400> 574
cccaggtgtc aggaatatac aggaccctcg gaaaaatggt gaattgggct gaacaaagag 60
atcagaattg aggtgagaag agcaggcaat ctctgatcag aagaattggg tacttggaat 120
cgatggatca gcagcagccc acaataccag cactacctca agtgggttat ggcacaaatc 180
catatatagc ccctccgatt gggggtcctc cacacccaca attagcatca taccatcaac 240
agcttcaggc cttctggggt aaccagatga gggaggttga gcaggcgcag gacttcaaga 300
cccacagcct gcctctggcc agaattaaga agatcatgaa ggcagacgag gatgtgaaga 360
tgatctctgc agaggcaccg gtggtgtttg ccaaggcatg cgagatgttc atactggaac 420
tgaccttgag gtcatggatt catacagagg agaacaagag aagaactttg cagaagaatg 480
acatagctgc agccattggt aggaccgata tatttgattt ccttgttgat attgtgccta 540
gagatgaatt caaggatgag ggttggtga tccctagggc tgcgggtgcc gtgcccttca 600
tgggtcctgg ggataacgtg ccatcttatt actatgttgc acagcaagct cccaacgtgg 660
cggcttatgc tcctcctact cagcaaatga ggtccaaagc acccgcacct cctcctcatg 720
gcagcagttg a 731

<210> 575
<211> 441
<212> DNA
<213> Pinus radiata

<400> 575
cagggatcat tgactctgcc caggactcta agtaggagga ctgtcgacga tgtgtggaga 60
gagattcata aggaaaacat tgatgggaat gggaatgcgc cggcgaatca ggccaggcag 120
ccaactttcg gagagatgac attggaagat ttcttggtga aagcaggggt tgtgagagag 180
gatgcagagc agggagatgg gcagtcattt ggggcgtttc ggaatgctct agatggggaa 240
tttgtagcaa atttggcaga aagaaatggg gataatagat taggtatcgg taattcactt 300
ggccttggat ttggtgaaag agggcatagg aatggagaag tgggtagtaa caagagtgga 360
gcaggggcg tgcctggact ttctctgtct cctactaatg tcttcctaat catgctgcca 420
tggatatggt gaatcttgat g 441

<210> 576
<211> 271
<212> DNA
<213> Pinus radiata

<400> 576
tttcaaagga gaaaaaagaa atccattgga aggggttgcc taaagacaag tataaatgat 60
gttgaacagc ttaaggctga gaaattgctc ttgaaaagta ggattgagaa gaaagcatct 120
tattttcacg aactcgaaga acagattata ggccttcaaa atctggtgaa acgaaacgag 180
catagatata gttcagggaa tactccatct gggggtgtat cgttaccctt catattggtc 240
cagactcatc cccgtgccac tgttgaaatt g 271

<210> 577
<211> 315
<212> DNA
<213> Pinus radiata

<400> 577
gggattcgca gagctaccag acagaaaagt ggtattctat cttcagttct ttctaaccag 60
aatgcccatc tcagtgtgct tgctgctgca gctagtgctg ttgccacaaa gagcatgttt 120
catgttttct acaatccaag gacaagtcca gcagagttca ttatacctta tcagaaatat 180
gtgaaaagtt gcaagcaacc attgtctatt ggaatgcgct tcaaaatgag atttgaaaca 240
gaggataccg ctgagagaag gtacactggc atgataactg caataggtga tgcagatcct 300
gctagatggc ctggt 315

<210> 578
<211> 384
<212> DNA
<213> Pinus radiata

<400> 578
caagataccc actctgaacc aatggctatg gagatgggat tagtcattga cggagatagg 60
ttttcctcag agggtgatgg agatattatg ttggatggcg aggatctgtt gccagaaatc 120
aacgatatgt tttgggaaca atttcttgca gagagtgcaa cgtcaggggg aacggaagag 180
gctgagtctg cagcgcagga aagtcttacc aaagatcagg atgagaaacc atctgaaaat 240
gggaattggt ggaaaaaaaa tcaaaatatg gataatctca cggaacagat gggtcagctg 300
gcatcagaat caaatccttg agatttgtat cttgggatag atgcatattg tggagggaag 360
gatttccttt cccaatttgg ctag 384

<210> 579
<211> 434
<212> DNA
<213> Pinus radiata

<400> 579
gcgatggagc tgttagggat gcagggaggc tagtgcctgc ccttttctg gtgaagatgt 60
atcgtttagt ggatgatccc tccacaaacc acatcgtttc ttggggagag aataacaaca 120
gcttcgtggt atggcgcccc aaagagttct ctgcgtctgt gctgccatgc tatttcaacc 180
acgccaattt ctccagcttt gttcgacagc tcaataatta tggatttcga aagacatttc 240
gcgggcagtg cgagttttcg aacaaattat tcgagaaggg caagcagtat ctcctttgtc 300
atatccatag aagaagagcg tccaatagct cgcccatgcc gatggaatat ggtaaatcat 360
ctttattatt cccaatcatt ctacctacac aacactccaa tgttctggca gcgcctctgc 420
cttcttctct gtca 434

<210> 580
<211> 322
<212> DNA
<213> Pinus radiata

<400> 580
aaggaacgga tcttaaccga agagaacctt tttcttcgta aaaagtgtgg tgatgaacat 60
gtggattgtt cggcttttag aacacctcca gcacaactta gaagcatcca gaacattgat 120
gtggagactc aactggttat aagacctcca actgtacaac agcaccctga cgtcgatagt 180
cctcgataac tgttgcatat gcaaattttc tactttcatg aaataaacaa acagtacacc 240
tcattttgtt cgccttttgt aaacgtataa ttactactgc atatgtaagc tttcctctca 300
aaaaaaaaaa aaaaaaaaaa aa 322

<210> 581
<211> 448
<212> DNA
<213> Pinus radiata

<400> 581
aggatccaaa tgcgccaaag aaagccatga ctggatttat gttcttttct caagttgaaa 60
gagagaatct gaaaaagagt gacccaggaa tggcatttac tgatgtggga agaacacttg 120
gagaacggtg gaaaaaaatg tcagctgagg agaaagctcc ttacgaatca aaagccaggg 180
ctgataagga aaggtacaag gaagcaatgg ccgattacaa aagtggtcca acaaatgtgg 240
actccgggaa tgaatctgat agtgaataga gcatcatact tacaagttca tattaacatg 300

gctagccgtg taaagtaatt gctttcattt aaatgctttc accctctggt gcaatctttt 360
tacattcact tgagaatatt gttggtgtac ttcacattag caaaaagcaa gcttacaact 420
gagtagtgtc gagggatata cctacatg 448

<210> 582
<211> 321
<212> DNA
<213> Pinus radiata

<400> 582
accttctttt tggagtcaac atagattcct cgtctttgat tgttcctaat acagtatcaa 60
acatgaggag tattggcagc agtactgatg cagtcatgca atttggtgtt tctaattatt 120
tgaatgcacc tccttgtgct tccggttcca atatttcatt gaattcagac atcagtgctt 180
ctgcatgttt agatgaaagt ggacttttac cacccgctga aaatttggga cagatgaatg 240
cacctacaag aaccttcata aaggtttata agcaagggtc agtcgggaga tcgctagata 300
tctcacgctt cagcagttat c 321

<210> 583
<211> 739
<212> DNA
<213> Pinus radiata

<400> 583
ctgaattcta tccggttggg tattaaatta aggtgattgt tcgctacaga cgttctgtgg 60
acaccgagtg agtctcctag ccttggaatt tggcaccatc tcgtcccgca gccatttcag 120
ttcgatctcc cgccgtcaca aaaaataatc cccaattctc cagctgtccc tgccgtgtct 180
gcacgcgaca ggtctgcccg ggctttggtc tgtggaattt catgccaatt tatcacctat 240
aaactccacc cgcatctgcc cacaaacccc acaagtcaca cccctcttcg tcttctttga 300
aatctcagat gggttctgcc aattagctcg gatccttgcc tcttcagttg gttttgtgag 360
cacacacgag gccaggaccc gggtatcaac gattcccctc aactgacgta acccatggcg 420
accactcggc atcagcgcag tcccgatagc agcccgcgct cggaggatga atcaggagcg 480
cacacgtaca gcaaccagga tggttccgtg aaggaacagg atcgatttct gcccattgct 540
aatgtgagca gaatcatgaa gaaagccctt ccagctaatg ccaagatatc gaaagatgcc 600
aaggagacgg tgcaggaatg cgtttcagag ttcatcagtt tcatcactgg ggaagcctct 660
gacaagtgtc agagggagaa gaagaagacc atcaatgggg acgacctgct gtgggcaatg 720
ggaactctag ggtttgaaa 739

<210> 584
<211> 413
<212> DNA
<213> Pinus radiata

<400> 584
aaatctgact atcgggatag tgatgatgaa ggaggaggta ctgttcgaga aggaaaggat 60
ctgcaaacct caaatttcat cgattatttt ggtcaaagta atcatacaga agaagcagaa 120
aatgagcatg atgcatcagt ggataccaaa gggcccctgg aatccagcaa tgaagtcggc 180
catcctacca catacccga atcttcttca ttgtcagcgc aaggctctga gcctcgagtt 240
ttttcctgta attactgcca gagaaaattc tacagctcgc aggccttagg aggccatcag 300
aatgctcaca agcgagaacg caccttggca aagagggggc aaagaattgg ggcttttcaa 360
cacaggtaca taagcatggc atccctgcct ctccatggct ctacagaatc agc 413

<210> 585
<211> 622
<212> DNA
<213> Pinus radiata

<400> 585
ggtctagggg aaaagctttg aaattatttg ggtttgagtt tagagggtca gaaggtggat 60
catttgaagg gactaatggt tctgatcagc cacaagatgg gactaatata ttaactgcag 120
gtgaagcatc cactgagcca gtggaggaag aactagtgat tgaggccaaa aatggagatt 180
cagggaaatt agaagatgtg ggtagtccag tagaggctgg agaaagtggt agcactagca 240

attgcctggg atcatctgct caagaaaatc ggaaatatga atgccaatac tgttgcagag 300
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aggccaaacg cgcgcacctg ctggccacca ggagcgctgc tgcgagtgcc aacagaagtg 420
gcgccactgc atggtgcggg aacataaacg gtaacctcta ccatagaaat ttccttttca 480
ataattccta cttcacacgc atgcaggtgt ttcaagaaga tttcccgacc tttcagaccc 540
cacaggctgt tgcagctcca tcaatcccgc attatatctt cagttaccag cagcagcagc 600
aggcgcccgt gcagagtcgc tg 622

<210> 586
<211> 349
<212> DNA
<213> Pinus radiata

<400> 586
tgtaccggaa aattccaaac aaataatcaa ccatggactc atattgccgg agatgggctc 60
agtggacagc gggcgcgaag gcacgagagc aattttgtcc gatgattgtg tgaaattcga 120
atgccgatat tgttgtaggg ttttcccgac gtctcaggct ctcggcggcc accagaacgc 180
ccataaacga gaacggcgcc gggcaatgac gaggtttcag agatcgccct ctgacagttc 240
aaactattca ggaaaacaga atagtattga tctgtttagc cgtgagagag ttcccgggtc 300
ttctctcctt tcaccacacg gtacgaggga tcatgttgtt tgcagtgac 349

<210> 587
<211> 368
<212> DNA
<213> Pinus radiata

<400> 587
aaaaaggcgt cagaatgggg tgagtctgta gtaagtacaa gcgaaaacag taatgacttg 60
gatcctccta cttattctga aacctcttcc cctgctcaag gatctgatcc tcgggttttc 120
ccctgtaatt tctgtcaaag caaattctac agttctcaag cattaggagg tcatcaaaat 180
gcccataagc gtgagagaac tttggctaga agggcacaga gaatggggtc ttttgcacaa 240
agatattcaa gcatggcatc acttccactc cacggttcct cggaaacaag ttggacgccc 300
agtcggtttt tagggataaa agcacattct ttgattcaca aacctttccc tgaaggtgat 360
aacctgcc 368

<210> 588
<211> 516
<212> DNA
<213> Pinus radiata

<400> 588
ttcagatcta taaatcaatg tctgcattaa tgacaaacta agttgaaatt cccaaatgtt 60
ggtggttact atttaggatc ggacattagg cgttgtggtc tcgggttcga ttcacaaggc 120
atttctgttt cggaatttca aagcaacacg tatcagaaaa ctgattctat actgtgatga 180
cgcaggctac taactacaca gcaggtacca tcagagacga tcaagaggag caatgtgtga 240
ggaggggacc ttggactgtt gatgaggaca tgagccttat tcgatgcgta accacccggg 300
gtgaaggtcg atggaacaca gtagccaaat ttgcagggct aaagagaaca ggaaagagct 360
gcagattgag atggcttaat tatcttcggc ccgatgttaa acgtggaaac ataacgccgg 420
aagagcagct attaatcctt gaactccacc gtctctgggg taacagatgg tccaagattg 480
cacggcaact cccaggcagg actgacaacg aaatca 516

<210> 589
<211> 340
<212> DNA
<213> Pinus radiata

<400> 589
gagaactagt ctcgagttag ttatttgatt catattggtt gcagaggatt ttcagagatt 60
gatgatgagt gctgaagctg ctatggagag ggagagttgt ttcatggatg aaatgcgcag 120
gccgcagagg aagaagaaga ccgacgcaga ggatgatttt gacgagtgtt attatactca 180
tatgtgcaag atttgcaaga agaagttcgt ctcagggcgg gcttttggcg gtcatatgag 240

aattcatggc cctgtggcca ctgccgccgc cgccgctgct gagagcaatg ggaaaaatct 300
ggagccgcag aggaagagat cccgtgctga agagattcga 340

<210> 590
<211> 391
<212> DNA
<213> Pinus radiata

<400> 590
gttgggtgta aagggtctga cgcgtttgag gagagcttga agcattttg tagagtttgc 60
aagaggagat ttgcttgtgg gagggctctg ggtggtcata tgagagtaca tggagctgaa 120
ttgggtgcaa ttaagggtgg tggtttggaa gagcagtttg agaaggggag ggtgaaggag 180
cccagtagga gttgtggtga ttctgtcaag gaaggagtgc aggatgaggt agagggcttg 240
aattctatgt acactttgag gaggaacccg aagcgaagct ggaggtttgc agatcaggat 300
tactcttttg cctttggggg agtagatggg tctggggcta agagatttgg gtctacattt 360
ttgagggatt caagagtctg tgaggagtgt g 391

<210> 591
<211> 260
<212> DNA
<213> Pinus radiata

<400> 591
acgaaattac cttggggagt atactggaga gttgatttca catcgggaag ctgataagcg 60
aggaaagatt tatgatcgag aagactcctc cttccttttc aacttgaacg atcagtatgt 120
tcttgatgca taccggaagg gggataagtt gaaatttgca aatcattcac caactccaaa 180
ttgctatgca aaggtgatta tggttgctgg tgatcataga gtgggtattt ttgcaaagga 240
acgcattgca gccggtgagg 260

<210> 592
<211> 94
<212> PRT
<213> Eucalyptus grandis

<400> 592
Met Gly Glu Arg Asp Asp Leu Gly Leu Ser Leu Ser Leu Ser Phe Pro
1 5 10 15
Gln Gly His Leu His Gln Gln Gln Gln Gln Gln Gln Gln Gln Ser Leu
20 25 30
Gln Leu Asn Leu Met Pro Ser Leu Val Pro Ser Ser Ala Ser Ser Ala
35 40 45
Gln Ser Gly Phe Asn Leu Gln Lys Arg Ser Cys Asn Asp Ala Phe Pro
50 55 60
Ser Ser Ser Asp Arg Asn Ser Glu Ala Arg Ser Phe Leu Arg Gly Ile
65 70 75 80
Asp Val Asn Arg Glu Pro Ser Ala Gly Ala Ala Ala Asp Tyr
85 90

<210> 593
<211> 44
<212> PRT
<213> Eucalyptus grandis

<400> 593
Asp Lys Ala Arg Leu Val Gln Glu Thr Gly Leu Gln Leu Lys Gln Ile
1 5 10 15
Asn Asn Trp Phe Ile Asn Gln Arg Lys Arg Asn Trp His Ser Asn Pro
20 25 30
Ser Thr Ser Thr Val Leu Lys Ser Lys Arg Lys Arg
35 40

<210> 594
<211> 291
<212> PRT
<213> Eucalyptus grandis

<400> 594
Gly Glu Pro Leu Trp Ile Arg Ser Val Glu Thr Gly Arg Glu Ile Leu
1 5 10 15
Asn Tyr Asp Glu Tyr Val Lys Glu Phe Lys Val Glu Ala Pro Ser Glu
20 25 30
Gly Arg Pro Lys Arg Ser Ile Glu Ala Ser Arg Glu Thr Gly Val Val
35 40 45
Phe Val Asp Leu Pro Arg Leu Val Gln Ser Phe Met Asp Val Asn Gln
50 55 60
Trp Lys Glu Met Phe Pro Cys Met Ile Ser Lys Ala Ala Thr Val Asp
65 70 75 80
Val Val Cys Ser Gly Glu Gly Pro Asn Arg Asn Gly Ala Val Gln Leu
85 90 95
Met Phe Ala Glu Leu Gln Met Leu Thr Pro Met Val Pro Thr Arg Glu
100 105 110
Val Tyr Phe Ile Arg Tyr Cys Lys Gln Leu Ser Ala Glu Gln Trp Ala
115 120 125
Leu Val Asp Val Ser Ile Glu Lys Val Glu Asp Asn Ile Asp Ala Ser
130 135 140
Leu Val Lys Cys Arg Lys Arg Pro Ser Gly Cys Ile Ile Glu Asp Lys
145 150 155 160
Ser Asn Gly His Cys Lys Val Ile Trp Val Glu His Leu Glu Cys Gln
165 170 175
Lys Thr Thr Val His Pro Met Tyr Arg Thr Ile Val Asn Ser Gly Leu
180 185 190
Ala Phe Gly Ala Arg His Trp Met Thr Thr Leu Gln Val Gln Cys Glu
195 200 205
Arg Leu Val Phe Phe Met Ala Thr Asn Val Pro Thr Lys Asp Ser Asn
210 215 220
Gly Val Ala Thr Leu Ala Gly Arg Lys Ser Ile Leu Arg Leu Ala Gln
225 230 235 240
Arg Leu Thr Gln Ser Phe Cys Gln Ala Ile Gly Ala Ser Ser Tyr His
245 250 255
Ser Trp Thr Lys Val Pro Thr Lys Thr Gly Glu Asp Ile Arg Val Ala
260 265 270
Ser Arg Lys Asn Leu Asn Asp Pro Gly Glu Pro Leu Gly Val Ile Leu
275 280 285
Cys Ala Val
290

<210> 595
<211> 25
<212> PRT
<213> Eucalyptus grandis

<400> 595
Met Gln Ala Val Met Thr Gly Cys Asp Ser Ser Asn Ile Ala Ala Leu
1 5 10 15
Pro Ser Gly Phe Ser Ile Leu Pro Asp
20 25

<210> 596
<211> 263
<212> PRT
<213> Eucalyptus grandis

<400> 596
Gln Asn Gly Pro Ser Met Pro Pro Val Gln Pro Phe Val Arg Ala Glu
1 5 10 15
Met Leu Pro Ser Gly Tyr Leu Val Arg Pro Cys Glu Gly Gly Gly Ser
20 25 30
Ile Ile Arg Ile Val Asp His Leu Asp Leu Glu Pro Trp Ser Val Pro
35 40 45
Glu Val Leu Arg Pro Leu Tyr Glu Ser Ser Thr Met Leu Ala Gln Lys
50 55 60
Thr Thr Met Ala Ala Leu Arg Gln Leu Arg Gln Ile Ala Gln Glu Val
65 70 75 80
Ser Gln Pro Asn Val Ser Gly Trp Gly Arg Arg Pro Ala Ala Leu Arg
85 90 95
Ala Leu Ser Gln Arg Leu Ser Arg Gly Phe Asn Glu Ala Leu Asn Gly
100 105 110
Phe Thr Asp Glu Gly Trp Ser Ile Met Gly Asn Asp Gly Ile Asp Asp
115 120 125
Val Thr Ile Leu Val Asn Ser Ser Pro Asp Lys Leu Met Gly Leu Asn
130 135 140
Leu Ser Phe Ser Asn Gly Phe Pro Ala Val Ser Asn Ala Val Leu Cys
145 150 155 160
Ala Arg Ala Ser Met Leu Leu Gln Asn Val Pro Pro Ala Val Leu Leu
165 170 175
Arg Phe Leu Arg Glu His Arg Ser Glu Trp Ala Asp Asn Ser Ile Asp
180 185 190
Ala Tyr Ser Ala Ala Ala Val Lys Val Gly Ser Cys Ala Leu Pro Gly
195 200 205
Ser Arg Ile Gly Ser Phe Gly Gly Gln Val Ile Leu Pro Leu Ala His
210 215 220
Thr Ile Glu His Glu Glu Phe Leu Glu Val Ile Lys Leu Glu Gly Met
225 230 235 240
Gly His Ser Pro Glu Asp Ala Leu Met Pro Arg Asp Ile Phe Phe Leu
245 250 255
Gln Met Cys Ser Gly Val Asp
260

<210> 597
<211> 134
<212> PRT
<213> Eucalyptus grandis

<400> 597
Cys Pro Ile Asp Ser Gly Arg Ser Phe Asp Thr Ser Leu Ser Leu Gly
1 5 10 15
Leu Gly Cys Tyr Gly Asp Pro Glu Asp His Glu Ile Lys Ile Lys Lys
20 25 30
Pro Leu Ala Lys Leu Ser Gly Asn Ser Thr Cys Leu Thr Ile Gly Leu
35 40 45
Pro Gly Gly Glu Ala Cys Gly Leu Gly Ser Ala Ser Gly Asp Glu Val
50 55 60
Arg Asn Ile Pro Ser Arg Ser Ala Ser Ser Phe Ser Asn Ser Ser Ser
65 70 75 80
Ala Lys Arg Glu Lys Ala Glu Gln Gly Glu Glu Glu Ala Val Glu Arg
85 90 95
Gly Thr Gly Ser Pro Arg Ala Thr Ile Asn Ile Glu Asp Glu Asp Glu
100 105 110
Phe Ser Pro Arg Lys Lys Leu Arg Leu Ser Lys Ala Gln Ser Ser Ile
115 120 125
Leu Glu Glu Met Leu Gln
130

<210> 598
<211> 220
<212> PRT
<213> Eucalyptus grandis

<400> 598
Met Gly Gln Gln Ser Leu Ile Tyr Ser Phe Val Ala Arg Gly Thr Val
1 5 10 15
Ile Leu Ala Asp Tyr Thr Glu Phe Thr Gly Asn Phe Thr Ser Val Ala
20 25 30
Phe Gln Cys Leu Gln Lys Leu Pro Ala Thr Asn Asn Lys Phe Thr Tyr
35 40 45
Ser Cys Asp Gly His Thr Phe Asn Phe Leu Val Asp Asp Gly Phe Thr
50 55 60
Tyr Cys Val Val Ala Val Glu Ser Val Gly Arg Gln Val Pro Ile Ala
65 70 75 80
Phe Leu Glu Arg Val Lys Asp Asp Phe Thr Lys Arg Tyr Gly Gly Gly
85 90 95
Lys Ala Ala Thr Ala Val Ala Lys Ser Leu Asn Lys Glu Phe Gly Ser
100 105 110
Lys Leu Lys Glu Gln Met Gln Tyr Cys Val Asp His Pro Glu Glu Ile
115 120 125
Ser Lys Leu Ala Lys Val Lys Ala Gln Val Ser Glu Val Lys Gly Val
130 135 140
Met Met Glu Asn Ile Glu Lys Val Leu Asp Arg Gly Glu Lys Ile Glu
145 150 155 160
Leu Leu Val Asp Lys Thr Glu Asn Leu Arg Ser Gln Ala Gln Asp Phe
165 170 175
Arg Gln Gln Gly Thr Gln Ile Arg Arg Lys Met Trp Leu Gln Asn Met
180 185 190
Lys Ile Lys Leu Ile Val Leu Gly Ile Leu Ile Ala Leu Ile Leu Ile
195 200 205
Ile Val Leu Ser Ile Cys Gly Asn Gly Lys Cys Lys
210 215 220

<210> 599
<211> 149
<212> PRT
<213> Eucalyptus grandis

<400> 599
Glu Glu Lys Lys Glu Glu Pro Pro Ala Pro Ile Thr Val Val Leu Lys
1 5 10 15
Val Gly Met His Cys Glu Ala Cys Thr Arg Val Leu Arg Lys Arg Ile
20 25 30
Arg Lys Ile Lys Gly Val Glu Thr Val Glu Thr Asp Val Val Asn Asp
35 40 45
Arg Val Ile Val Lys Gly Val Val Asp Pro Pro Lys Leu Val Ala Tyr
50 55 60
Val Lys Lys Arg Thr Gly Lys Gln Ala Ser Ile Val Lys Glu Glu Glu
65 70 75 80
Lys Lys Glu Glu Glu Lys Lys Glu Glu Ala Lys Lys Glu Glu Ser Lys
85 90 95
Glu Gly Glu Lys Lys Asp Gly Glu Glu Gly Lys Asp Glu Asp Gly Ser
100 105 110
Lys Met Asp Ile Lys Lys Asn Glu Tyr Trp Pro Ser Arg Pro Tyr Met
115 120 125
Glu Tyr Gln Met Tyr Pro Thr Gln Ile Phe Ser Asp Glu Asn Pro Asn
130 135 140
Ala Cys Ser Val Met
145

<210> 600
<211> 107
<212> PRT
<213> Eucalyptus grandis

<400> 600
Met Glu Phe Pro Ser Glu Phe Ser Glu Ala Ser Ser Gln Lys Arg Ile
1 5 10 15
Gly Gly Arg Gly Lys Ile Glu Ile Lys Arg Ile Glu Asn Thr Thr Asn
20 25 30
Arg Gln Val Thr Phe Cys Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
35 40 45
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Val Phe
50 55 60
Ser Ser Arg Gly Arg Leu Tyr Glu Tyr Ala Asn Asn Ser Val Arg Gly
65 70 75 80
Thr Ile Glu Arg Tyr Lys Lys Ala Ser Ser Asp Ser Ser His Pro Gln
85 90 95
Ser Val Ser Glu Val Asn Thr Gln Phe Tyr Pro
100 105

<210> 601
<211> 233
<212> PRT
<213> Eucalyptus grandis

<400> 601
Met Ala Arg Gly Lys Ile Gln Ile Lys Leu Ile Glu Asn Thr Thr Asn
1 5 10 15
Arg Gln Val Thr Tyr Ser Lys Arg Arg Asn Gly Leu Phe Lys Lys Ala
20 25 30
Asn Glu Leu Thr Val Leu Gly Asp Pro Lys Val Ser Ile Ile Met Ile
35 40 45
Ser Ser Thr Gly Lys Leu His Glu Tyr Ile Ser Pro Ser Thr Ser Thr
50 55 60
Lys Lys Met Tyr Asp Gln Tyr Gln Gln Ala Leu Glu Val Asp Leu Trp
65 70 75 80
Ser Ser His Tyr Glu Lys Met Gln Glu Asn Leu Arg Lys Leu Lys Glu
85 90 95
Val Asn Lys Lys Leu Gln Leu Glu Val Arg Arg Arg Phe Gly Glu Gly
100 105 110
Leu Asn Gly Met Ser Leu Ser Glu Leu Cys Gly Leu Glu Gln Asp Met
115 120 125
Asp Asn Ala Val Ser Leu Ile Arg Glu Arg Lys Tyr Lys Thr Leu Gly
130 135 140
Asn Gln Ile Asp Thr Ala Arg Lys Lys Lys Lys Asn Ala Glu Glu Ile
145 150 155 160
Asn Lys Ser Leu Leu Gln Asp Trp Thr Asn Leu Ile Lys His Leu Arg
165 170 175
Glu Asp Asp Pro His Phe Gly Met Val Asp Asn Gly Arg Asp Tyr Glu
180 185 190
Ala Val Ile Gly Tyr Thr Asp Ala Ala Ala Ala Ala Arg Leu Tyr Thr
195 200 205
Leu Arg Leu Gln Pro Asp Gln Pro Asn Leu Thr Ser Gly Gly Gly Ser
210 215 220
Glu Ile Thr Thr Tyr Pro Leu Leu Glu
225 230

<210> 602
<211> 113

<212> PRT
<213> Eucalyptus grandis

<400> 602
Met Ser Gln Lys Gly Leu Ile Tyr Ser Phe Val Ala Lys Gly Thr Val
1   5   10   15
Val Leu Ala Glu His Thr Gln Phe Ser Gly Asn Phe Ser Thr Ile Ala
            20   25   30
Val Gln Cys Leu Gln Lys Leu Pro Ser Asn Ser Ser Lys Tyr Thr Tyr
        35   40   45
Ser Cys Asp Gly His Thr Phe Asn Phe Leu Thr Asp Ser Gly Phe Val
    50   55   60
Phe Leu Val Val Ala Asp Glu Ser Val Gly Arg Ser Val Pro Phe Val
65   70   75   80
Phe Leu Glu Arg Val Lys Asp Asp Phe Met Gln His Tyr Ser Ala Ser
                85   90   95
Ile Ala Ser Gly Asp Pro His Pro Leu Ala Asp Asp Asp Glu Asp Asp
            100   105   110
Asp

<210> 603
<211> 111
<212> PRT
<213> Eucalyptus grandis

<400> 603
Met Gly Arg Gly Arg Val Glu Leu Lys Arg Ile Glu Asn Lys Ile Asn
1   5   10   15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
            20   25   30
Tyr Glu Leu Ser Val Leu Cys Asp Val Glu Val Ala Leu Leu Ile Phe
        35   40   45
Ser Ser Arg Gly Lys Leu Tyr Glu Phe Gly Ser Ala Gly Pro Ser Gly
    50   55   60
Ile Asn Lys Thr Leu Glu Arg Tyr Gln Arg Asp Asn Phe Thr Pro Gln
65   70   75   80
Asp Asn Val Ala Glu His Glu Thr Gln Gln Asn Trp Phe Gln Glu Ile
                85   90   95
Ser Lys Leu Lys Ala Lys Tyr Glu Leu Phe Asn Lys Leu Gln Lys
            100   105   110

<210> 604
<211> 65
<212> PRT
<213> Eucalyptus grandis

<400> 604
Leu Leu Gln Lys Ser Ser Gln Glu Glu Asp Lys Ala Arg Leu Val Gln
1   5   10   15
Asp Thr Gly Leu Gln Leu Thr Gln Ile Asn Asn Trp Phe Ile Asn Gln
            20   25   30
Arg Lys Arg Asn Trp His Ser Asn Pro Ser Ser Ser Thr Val Pro Lys
        35   40   45
Ser Lys Arg Lys Arg Ser His Ala Gly Asp Pro Asp Lys Glu Arg Pro
    50   55   60
Met
65

<210> 605
<211> 60

<212> PRT
<213> Eucalyptus grandis

<400> 605
Cys Ile Glu Thr Lys Ala Arg Phe Gly Lys Ser Val Glu Ser Pro Ala
1 5 10 15
Thr Asp Lys Trp Lys Val Trp Phe Gln Asn Arg Arg Ala Arg Thr Lys
20 25 30
Leu Lys Gln Thr Ala Val Glu Cys Glu Met Leu Gln Lys Cys Cys Glu
35 40 45
Thr Leu Lys Glu Ala His Ser Arg Leu Gln Lys Glu
50 55 60

<210> 606
<211> 188
<212> PRT
<213> Eucalyptus grandis

<400> 606
Met Ala Phe Ala Gly Thr Thr Gln Lys Cys Met Ala Cys Glu Lys Thr
1 5 10 15
Val Tyr Leu Val Asp Lys Leu Thr Ala Asp Asn Arg Ile Tyr His Lys
20 25 30
Ala Cys Phe Arg Cys His His Cys Lys Gly Thr Leu Lys Leu Gly Asn
35 40 45
Tyr Asn Ser Phe Glu Gly Val Leu Tyr Cys Arg Pro His Phe Asp Gln
50 55 60
Leu Phe Lys Arg Thr Gly Ser Leu Glu Lys Ser Phe Glu Gly Thr Pro
65 70 75 80
Lys Ile Ala Lys Pro Glu Lys Pro Val Asp Gly Glu Arg Pro Ala Ala
85 90 95
Thr Lys Ala Ser Ser Met Phe Gly Gly Thr Arg Asp Lys Cys Val Gly
100 105 110
Cys Lys Ser Thr Val Tyr Pro Thr Glu Lys Val Thr Val Asn Gly Thr
115 120 125
Pro Tyr His Lys Ser Cys Phe Lys Cys Thr His Gly Gly Cys Val Ile
130 135 140
Ser Pro Ser Asn Tyr Val Ala His Glu Gly Lys Leu Tyr Cys Arg His
145 150 155 160
His His Thr Gln Leu Ile Lys Glu Lys Gly Asn Leu Ser Gln Leu Glu
165 170 175
Gly Asp His Glu Arg Glu Thr Met Ala Pro Glu Ser
180 185

<210> 607
<211> 66
<212> PRT
<213> Eucalyptus grandis

<400> 607
Phe Gly Lys Ile Phe Glu Glu Ser Val Arg Lys Glu Leu Ser Pro Glu
1 5 10 15
Phe Ala Lys Leu Met Gln Glu Gly Ser Ala Tyr Leu Pro Ser Gly Ile
20 25 30
Cys Met Ser Thr Met Gly Arg His Val Ser Tyr Glu Gln Ala Ile Ala
35 40 45
Trp Lys Val Leu Ser Ala Glu Glu Asn Thr Val His Cys Leu Ala Ser
50 55 60
Leu Ser
65

<210> 608
<211> 60
<212> PRT
<213> Eucalyptus grandis

<400> 608
Asp Gly Asn Ile Glu Lys Val Leu Asp Arg Gly Glu Lys Ile Glu Leu
1 5 10 15
Leu Val Asp Lys Thr Val Asn Leu Arg Ser Gln Ala Gln Asp Phe Arg
20 25 30
Gln Gln Gly Pro Lys Met Arg Arg Lys Met Trp Leu Gln Asn Met Lys
35 40 45
Ile Glu Ala Asp Leu Val Leu Gly Ile Ile Ile Ala
50 55 60

<210> 609
<211> 133
<212> PRT
<213> Eucalyptus grandis

<400> 609
Ala Gln Arg Glu Arg Glu Arg Glu Asn Gly Phe Ala Gly Thr Thr Gln
1 5 10 15
Lys Cys Met Ala Cys Glu Lys Thr Val Tyr Leu Val Asp Lys Leu Thr
20 25 30
Ala Asp Asn Ser Ile Tyr His Lys Ala Cys Phe Arg Cys His His Cys
35 40 45
Asn Gly Thr Leu Lys Leu Gly Asn Tyr Asn Ser Phe Glu Gly Val Leu
50 55 60
Tyr Cys Arg Pro His Phe Asp Gln Leu Phe Lys Arg Thr Gly Ser Leu
65 70 75 80
Glu Lys Ser Phe Glu Gly Thr Pro Lys Ile Ala Lys Pro Glu Lys Pro
85 90 95
Val Ala Gly Glu Arg Pro Ala Gly Pro Lys Pro Pro Val Cys Ser Gly
100 105 110
Asp Arg Glu Thr Gln Cys Val Asp Val Arg Ala Arg Phe Pro Thr Glu
115 120 125
Lys Val Thr Val Leu
130

<210> 610
<211> 162
<212> PRT
<213> Eucalyptus grandis

<400> 610
Met Ala Lys Glu Lys Ile Lys Ile Lys Lys Ile Asp Asn Leu Thr Ala
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Arg Gly Leu Ile Lys Lys Ala
20 25 30
Glu Glu Leu Ser Val Leu Cys Asp Ala Asp Val Ser Leu Ile Val Phe
35 40 45
Ser Ala Thr Gly Lys Leu Tyr Asp Phe Ser Ser Ser Arg Gln Met Lys
50 55 60
Gly Glu Asp Leu Glu Gly Leu Asn Val Glu Glu Leu Asp Gln Leu Glu
65 70 75 80
Lys Lys Leu Glu Ala Gly Leu Ser Leu Val Ile Lys Asn Lys Glu Glu
85 90 95
Lys Thr Trp Asn Glu Ile Asn Lys Leu Gln Arg Lys Glu Ala Gln Leu
100 105 110
Ile Lys Gln Asn Lys Gln Leu Lys His Glu Met Lys Met Ile Leu His

```
        115                 120                 125
Gln Glu Lys Ser Val Thr Val Asn Ser Glu Ser Val Lys Asp Val Tyr
    130                 135                 140
Ile Ser Arg Asn Ser Met Pro Pro Leu Asp Gly Asp Ser Pro Asn Pro
145                 150                 155                 160
Ser Ser


      <210> 611
      <211> 43
      <212> PRT
      <213> Eucalyptus grandis

      <400> 611
Met Met Ala Val Thr Ser Ala Cys Lys Asp Lys Met Gly Ile Asp Asn
 1               5                  10                  15
Gly Lys Tyr Val Arg Tyr Thr Pro Glu Gln Val Glu Ala Leu Glu Arg
            20                  25                  30
Leu Tyr His Glu Cys Pro Lys Pro Ser Ser Leu
        35                  40

      <210> 612
      <211> 226
      <212> PRT
      <213> Eucalyptus grandis

      <400> 612
Ser Ala Ala Ser Leu Lys Ala Ser Pro Phe Gly Tyr Pro Gly Met Arg
 1               5                  10                  15
Pro Thr Arg Phe Thr Gly Ser Gln Ile Ile Met Pro Leu Gly His Thr
            20                  25                  30
Ile Glu His Glu Glu Met Leu Glu Val Ile Arg Leu Glu Gly His Ser
        35                  40                  45
Leu Ala Gln Glu Asp Ala Phe Val Ser Arg Asp Ile His Leu Leu Gln
    50                  55                  60
Ile Cys Ser Gly Ile Asp Glu Asn Ala Val Gly Val Cys Ser Glu Leu
65                  70                  75                  80
Ile Phe Ala Pro Ile Asp Glu Met Phe Pro Asp Asp Ala Pro Leu Leu
                85                  90                  95
Pro Ser Gly Phe Arg Ile Ile Pro Leu Asp Ser Lys Ser Ser Asp Val
            100                 105                 110
Gln Asp Ser Leu Thr Thr Asn Arg Thr Leu Asp Leu Thr Ser Ser Leu
        115                 120                 125
Glu Val Gly Pro Ala Ser Thr Asn Cys Val Gly Asp Val Ala Pro Ser
    130                 135                 140
His Gly Ala Arg Ser Val Leu Thr Ile Ala Phe Gln Phe Pro Phe Asp
145                 150                 155                 160
Ala Asn Thr Gln Asp Asn Val Ala Val Met Ala Arg Gln Tyr Val Arg
                165                 170                 175
Ser Val Ile Ser Ser Val Gln Arg Val Ala Met Val Ile Ser Pro Ser
            180                 185                 190
Gly Leu Gly Pro Ser Ile Asn Pro Lys Leu Ser Gln Gly Ser Pro Glu
        195                 200                 205
Ala Leu Thr Leu Ala Asn Trp Ile Cys Gln Ser Tyr Arg His Val Leu
    210                 215                 220
Ile Ile
225

      <210> 613
      <211> 82
      <212> PRT
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<213> Eucalyptus grandis

<400> 613

Arg Asp His Trp Ser Ser Phe Ser Ala Pro Ile Asp Glu Met Phe Pro
1 5 10 15
Asp Asp Ala Pro Leu Leu Pro Ser Gly Phe Arg Ile Ile Pro Leu Asp
20 25 30
Ser Lys Ser Ser Asp Val Gln Asp Ser Leu Thr Thr Asn Arg Thr Leu
35 40 45
Asp Leu Thr Ser Ser Leu Glu Val Gly Pro Ala Ser Thr Asn Cys Val
50 55 60
Gly Asp Val Ala Pro Ser His Gly Ala Arg Ser Val Leu Thr Ile Ala
65 70 75 80
Phe Gln

<210> 614
<211> 234
<212> PRT
<213> Eucalyptus grandis

<400> 614

Leu Asp Leu Ala Ser Ser Leu Glu Ile Gly Pro Ala Gly Asn Arg Ser
1 5 10 15
Phe Asn Asp Ile Asn Ala Asn Ser Gly Cys Thr Arg Ser Val Met Thr
20 25 30
Ile Ala Phe Glu Phe Ala Phe Glu Ser His Met Gln Glu His Val Ala
35 40 45
Ser Met Ala Arg Gln Tyr Val Arg Ser Ile Ile Ser Ser Val Gln Arg
50 55 60
Val Ala Leu Ala Leu Ser Pro Ser Asn Leu Gly Ser His Ala Gly Leu
65 70 75 80
Arg Thr Pro Leu Gly Thr Pro Glu Ala Gln Thr Leu Ala Arg Trp Ile
85 90 95
Cys His Ser Tyr Arg Cys Tyr Leu Gly Val Asp Leu Leu Lys Ser Ser
100 105 110
Asn Glu Gly Ser Glu Leu Ile Leu Lys Asn Leu Trp His His Ser Asp
115 120 125
Ala Ile Met Cys Cys Ser Leu Lys Ala Leu Pro Val Phe Thr Phe Ala
130 135 140
Asn Gln Ala Gly Leu Asp Met Leu Glu Thr Thr Leu Val Ala Leu Gln
145 150 155 160
Asp Ile Thr Leu Glu Lys Ile Phe Asp Asp His Gly Arg Lys Thr Leu
165 170 175
Cys Ser Glu Phe Pro Gln Ile Met Gln Gln Gly Phe Ala Cys Leu Gln
180 185 190
Gly Gly Ile Cys Leu Ser Ser Met Gly Arg Pro Val Ser Tyr Glu Arg
195 200 205
Ala Val Ala Trp Lys Val Met Asn Glu Glu Glu Asn Ala His Cys Ile
210 215 220
Cys Phe Met Phe Ile Asn Trp Ser Phe Val
225 230

<210> 615
<211> 100
<212> PRT
<213> Eucalyptus grandis

<400> 615

Met Ala Phe Ala Gly Thr Thr Gln Lys Cys Met Ala Cys Glu Lys Thr
1 5 10 15

Val Tyr Leu Val Asp Lys Leu Thr Ala Asp Asn Arg Ile Tyr His Lys
20 25 30
Ala Cys Phe Arg Cys His His Cys Lys Gly Thr Leu Lys Leu Gly Asn
35 40 45
Tyr Asn Ser Phe Glu Gly Val Leu Tyr Cys Arg Pro His Phe Asp Gln
50 55 60
Leu Phe Lys Arg Thr Gly Ser Leu Glu Lys Ser Phe Glu Gly Asn Pro
65 70 75 80
Gln Asp Leu Gln Ser Pro Glu Lys Pro Val Val Glu Arg Asp Leu Gln
85 90 95
Arg Pro Lys Ala
100

<210> 616
<211> 93
<212> PRT
<213> Eucalyptus grandis

<400> 616
Met Ala Phe Lys Ser Pro Gly Gly Ile Thr Trp Leu Lys His Leu Leu
1 5 10 15
Val Lys Asn Phe Tyr Leu Gly Glu His Leu Lys Cys Arg Asn Gly Leu
20 25 30
Ile Lys Lys Ala Tyr Glu Leu Ser Val Leu Cys Asp Ile Asp Ile Ala
35 40 45
Leu Ile Met Phe Ser Pro Ser Asp Arg Val Ser His Phe Ser Gly Lys
50 55 60
Arg Arg Ile Glu Asp Val Leu Thr Arg Phe Ile Asn Leu Thr Asp Gln
65 70 75 80
Glu Arg Asp Thr Pro Arg Cys Pro Gly Ser Ala His Thr
85 90

<210> 617
<211> 41
<212> PRT
<213> Eucalyptus grandis

<400> 617
Met Gly Arg Gly Arg Val Gln Leu Lys Arg Ile Glu Asn Lys Ile Asn
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
20 25 30
Tyr Glu Leu Ser Leu Leu Cys Asp Ala
35 40

<210> 618
<211> 62
<212> PRT
<213> Eucalyptus grandis

<400> 618
Glu Ile Ser Val Leu Cys Asp Ala Asp Val Ala Leu Ile Val Phe Ser
1 5 10 15
Thr Lys Gly Lys Leu Phe Glu Tyr Ala Thr Asp Cys Cys Met Glu Arg
20 25 30
Ile Leu Glu Arg Tyr Glu Arg Tyr Ser Tyr Ala Glu Ser Gln Val Leu
35 40 45
Thr Asn Asn Ala Glu Thr Asn Gly Asn Trp Thr Leu Glu His
50 55 60

<210> 619

<211> 86
<212> PRT
<213> Eucalyptus grandis

<400> 619
```
Asp Ser Ser His Pro Gln Ser Val Ser Glu Val Asn Thr Gln Phe Tyr
 1               5                  10                  15
Gln Gln Glu Ala Ser Lys Leu Arg Arg Gln Ile Arg Glu Ile Gln Val
            20                  25                  30
Ser Asp Arg His Leu Leu Gly Glu Gly Ile Ser Asp Leu Ser Phe Lys
        35                  40                  45
Asp Leu Lys Asn Leu Glu Ser Lys Leu Glu Lys Ser Ile Ser Arg Val
    50                  55                  60
Arg Ser Lys Lys Asn Glu Met Leu Phe Ala Glu Ile Glu Tyr Met Gln
65                  70                  75                  80
Met Arg Gly Leu Val Gln
                85
```

<210> 620
<211> 99
<212> PRT
<213> Eucalyptus grandis

<400> 620
```
Glu Asn Ser Arg Asn Glu Trp Asp Ile Leu Ser Asn Gly Gly Gln Val
 1               5                  10                  15
Gln Glu Met Ala His Ile Ala Asn Gly Arg Asp Pro Gly Asn Ser Val
            20                  25                  30
Ser Leu Leu Arg Val Asn Asn Ala Asn Ser Ser Gln Ser Asn Met Leu
        35                  40                  45
Ile Leu Gln Glu Ser Cys Thr Asp Ser Val Gly Ala Tyr Val Ile Tyr
    50                  55                  60
Ala Pro Val Asp Ile Val Ala Met Asn Val Val Leu Asn Gly Gly Asp
65                  70                  75                  80
Pro Asp Tyr Val Ala Leu Leu Pro Ser Gly Phe Ala Ile Leu Pro Asp
                85                  90                  95
Gly Pro Glu
```

<210> 621
<211> 72
<212> PRT
<213> Eucalyptus grandis

<400> 621
```
Thr Glu Gln Val His Phe Leu Glu Lys Asn Phe Glu Leu Glu Asn Lys
 1               5                  10                  15
Leu Glu Pro Glu Arg Lys Ile Gln Leu Ala Lys Asp Leu Gly Leu Gln
            20                  25                  30
Pro Arg Gln Val Ala Ile Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys
        35                  40                  45
Thr Lys His Leu Glu Lys Glu Tyr Glu Asp Leu Gln Ala Ser Tyr Asn
    50                  55                  60
Ser Leu Lys Ala Asp Cys Asp Gly
65                  70
```

<210> 622
<211> 79
<212> PRT
<213> Eucalyptus grandis

<400> 622
Asn Arg Gln Val Thr Phe Ala Lys Arg Arg Asn Gly Leu Leu Lys Lys
1 5 10 15
Ala Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile
20 25 30
Phe Ser Thr Arg Gly Lys Leu Tyr Glu Phe Cys Ser Ser Pro Ser Met
35 40 45
Leu Lys Thr Leu Asp Arg Tyr Gln Lys Cys Ser Tyr Gly Ser Val Glu
50 55 60
Val Asn Lys Pro Ser Lys Glu Leu Glu Asn Ala Tyr Arg Glu Tyr
65 70 75

<210> 623
<211> 242
<212> PRT
<213> Eucalyptus grandis

<400> 623
Met Gly Arg Gly Arg Leu Gln Leu Lys Arg Ile Glu Asn Lys Ile Asn
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Ala Gly Leu Leu Lys Lys Ala
20 25 30
His Glu Ile Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile Phe
35 40 45
Ser Ala Lys Gly Lys Leu Phe Glu Tyr Ser Thr Asp Ser Cys Met Glu
50 55 60
Arg Ile Leu Glu Arg Tyr Glu Arg Tyr Ser Tyr Ser Glu His Gln Val
65 70 75 80
Leu Ala Ser Glu Thr Glu Ser Ile Gly Ser Trp Thr Leu Glu His Ala
85 90 95
Lys Leu Lys Ala Arg Leu Glu Val Leu His Arg Asn Tyr Arg His Phe
100 105 110
Met Gly Glu Asp Leu Asp Ser Leu Ser Leu Lys Asp Leu Gln Asn Leu
115 120 125
Glu Gln Gln Leu Glu Ser Ala Leu Lys His Ile Arg Ser Arg Lys Asn
130 135 140
Gln Leu Met His Glu Ser Ile Ser Val Leu Gln Lys Lys Asp Arg Ala
145 150 155 160
Leu Gln Glu Gln Asn Asn Leu Leu Thr Arg Lys Val Lys Glu Lys Glu
165 170 175
Arg Ala Leu Ala Gln Gln Ala Gln Trp Glu Gln Gln Asp His Ala Leu
180 185 190
Asp Ser Pro Val Val Leu Pro His Tyr Leu Pro Ser Leu Asp Ile Asn
195 200 205
Gly Ser Tyr Gln Ala Arg His Asn Gly His Asp Asp Gly Glu Asn Leu
210 215 220
Thr Gln Pro Arg Ala Gly Thr Leu Leu Pro Pro Trp Met Leu His Arg
225 230 235 240
Leu Asn

<210> 624
<211> 360
<212> PRT
<213> Eucalyptus grandis

<400> 624
Met Lys Arg Leu Gly Ser Ser Asp Ser Leu Gly Ala Leu Met Ser Ile
1 5 10 15
Cys Pro Pro Ser Glu Glu Leu Gln His Ser Pro Arg Asn Gly Asn Pro
20 25 30

```
Ile Tyr His Ser Arg Asp Leu Gln Ser Met Leu Glu Leu Gly Leu Asp
        35                  40                  45
Glu Glu Gly Cys Val Glu Asp Gln Ser Ala Gly Gly Gly Gly His Val
    50                  55                  60
Gly Gly Glu Lys Lys Arg Arg Leu Ser Ile Asp Gln Val Lys Ala Leu
65                  70                  75                  80
Glu Lys Asn Phe Glu Val Glu Asn Lys Leu Glu Pro Glu Arg Lys Val
                85                  90                  95
Lys Leu Ala Gln Glu Leu Gly Leu Gln Pro Arg Gln Val Ala Val Trp
            100                 105                 110
Phe Gln Asn Arg Arg Ala Arg Trp Lys Thr Lys Gln Leu Glu Arg Asp
        115                 120                 125
Tyr Gly Val Leu Lys Ser Ser Tyr Glu Ala Leu Lys Leu Ser Tyr Asp
    130                 135                 140
Ala Leu Lys His Asp Asn Glu Ala Leu His Lys Glu Ile Lys Glu Leu
145                 150                 155                 160
Lys Ser Lys Leu Arg Glu Glu Asp Asp Asn Pro Glu Ser Asn Leu Ser
                165                 170                 175
Val Lys Glu Glu Val Ile Ile Pro Gly His Asp Val Ser Asp Lys Ile
            180                 185                 190
Arg Ala Ala Asp Asp Gly Asp Asp Asp Thr Lys Arg Ser Pro Pro Pro
        195                 200                 205
Pro Ile Thr Ala Pro Pro Arg Glu Leu Ser Phe Asn Asn Gly Gly Leu
    210                 215                 220
Lys Asp Gly Ser Ser Asp Ser Asp Ser Ser Ala Ile Val Asn Glu Glu
225                 230                 235                 240
Asn Ala Ala Thr Ser Ser Ser Ser Pro Asn Pro Ala Val Gln Ser His
                245                 250                 255
Gly Gly Phe Leu Lys Phe Met Gly Ser Ser Ser Ser Ser Ala Ser Pro
            260                 265                 270
Pro Pro Pro Pro Pro Ala Ser Phe Gly Gly Cys Phe Ser Phe Gln Phe
        275                 280                 285
Gln Arg Ala Tyr Gln Pro Gln Pro Gln Pro Pro His His His His His
    290                 295                 300
His Ser Pro Tyr Val Lys Met Glu Glu His Asn Phe Leu Gly Gly Glu
305                 310                 315                 320
Glu Asp Cys Asn Phe Phe Ser Gln Gln Gln Ala Pro Asn Pro Gln Trp
                325                 330                 335
Glu Arg Pro Gln Gln Gly Lys Arg Arg Lys Thr Asn Ser Pro Arg Gly
            340                 345                 350
Arg Gly Leu Gln Ile Arg Asp Arg
        355                 360

      <210> 625
      <211> 75
      <212> PRT
      <213> Eucalyptus grandis

      <400> 625
Met Gly Glu Glu Ser Phe Ile Tyr Ser Phe Val Ala Arg Gly Thr Met
 1               5                  10                  15
Ile Leu Ala Glu Tyr Thr Glu Phe Thr Gly Asn Phe Pro Ala Ile Ala
            20                  25                  30
Ala Gln Cys Leu Gln Lys Leu Pro Ser Ser Asn Asn Lys Phe Thr Tyr
        35                  40                  45
Ser Cys Asp His His Thr Phe Asn Phe Leu Leu Glu Asp Gly Tyr Ala
    50                  55                  60
Tyr Cys Val Val Ala Lys Glu Ser Val Gly Gln
65                  70                  75

      <210> 626
```

<211> 53
<212> PRT
<213> Eucalyptus grandis

<400> 626
Ile Pro Phe Ser Leu Phe Pro Pro Gln Ser Glu Gly Phe Phe Asn Pro
1 5 10 15
Met Asp Gly Asn Leu Ser Leu Gln Ile Gly Tyr Asn Pro Thr Cys Leu
20 25 30
Asp Glu Met Asn Ala Ser Val Ser Ser Gln Asn Val Ala Gly Phe Ile
35 40 45
Pro Gly Trp Met Leu
50

<210> 627
<211> 50
<212> PRT
<213> Eucalyptus grandis

<400> 627
Ala Gly Gly Glu Pro Met Trp Ile Ala Gly Pro Asp Gly Ser Ser Ser
1 5 10 15
Val Leu Asn Glu Asp Glu Tyr Ile Arg Ala Phe Pro Arg Gly Ile Val
20 25 30
Thr Asn Pro Thr Gly Phe Lys Arg Glu Pro His Asp Lys Pro Gly Ser
35 40 45
Ser Ser
50

<210> 628
<211> 232
<212> PRT
<213> Eucalyptus grandis

<400> 628
Leu Gly Thr Gln Ile Pro Ser Gly Ile His Met Pro Ser Ala Asn Leu
1 5 10 15
Ser Ser Ile Ser Phe Leu Gly Pro Ile Pro Met Val Ser Gly Asp Gly
20 25 30
Gly Gly Arg Thr Gly Ser Glu Arg Ser Arg Asn Ala Asp Cys Ala Pro
35 40 45
Ala Gly Phe Pro Gly Gly Asp Glu Asp Val Asn Lys Gly Gly Asp Ile
50 55 60
Pro Tyr Gly Met Ser Thr Ile Val Arg Val Ile Pro Asn Ser Arg Tyr
65 70 75 80
Leu Arg Val Ala Gln Gln Leu Leu Asp Glu Ile Val Asn Val Arg Lys
85 90 95
Ala Leu Lys Arg Ser Asp Asp Ala Asn Asp Gln Ser Arg His Glu Asn
100 105 110
Gln Arg Ser Pro Lys Asp Ala Asp Gly Gly Ser Lys Asn Glu Ala Ser
115 120 125
Ser Asn Pro Gln Glu Ser Ala Ser Asn Ser Ser Glu Leu Ser Ala Ala
130 135 140
Glu Lys Gln Asp Leu Gln Asn Lys Leu Thr Lys Leu Leu Ser Met Leu
145 150 155 160
Asp Glu Val Asp Lys Arg Tyr Lys Gln Tyr Tyr His Gln Met Gln Ile
165 170 175
Val Val Gln Ser Phe Asp Thr Ile Ala Gly Ser Gly Ala Ala Lys Pro
180 185 190
Tyr Thr Ala Leu Ala Leu Gln Arg Ile Ser Arg His Phe Arg Cys Leu
195 200 205

```
His Asp Ala Ile Thr Gly Gln Ile Gln Ala Thr Arg Lys Ser Leu Gly
    210                 215                 220
Glu Gln Asp Thr Ser Thr Glu Thr
225                 230

      <210> 629
      <211> 69
      <212> PRT
      <213> Eucalyptus grandis

      <400> 629
Leu Asp Ile Leu Glu Trp Ile Leu Glu Leu Ile Gly Val Thr Tyr Arg
 1               5                  10                  15
Arg Leu Asp Gly Ser Thr Gln Val Thr Asp Arg Gln Ser Ile Val Asp
            20                  25                  30
Thr Phe Asn Asn Asp Thr Ser Ile Phe Ala Cys Leu Leu Ser Thr Arg
        35                  40                  45
Ala Gly Gly Gln Gly Leu Asn Leu Thr Gly Ala Asp Thr Val Val Ile
    50                  55                  60
His Asp Met Gly Phe
65

      <210> 630
      <211> 62
      <212> PRT
      <213> Eucalyptus grandis

      <400> 630
Cys Trp His His Val His Thr Gln Cys Gly Lys Ala Gly Phe Gly Met
 1               5                  10                  15
Leu Lys Gln Glu Asn Leu Ser Asn Glu Leu Asp Arg Val Lys Lys Glu
            20                  25                  30
Asn Asp Asn Leu Gln Ile Gln Leu Arg His Leu Arg Gly Arg His Asn
        35                  40                  45
Ile Thr Glu Pro Gln Arg Ala Asp Asn Pro Arg Arg His Ser
    50                  55                  60

      <210> 631
      <211> 113
      <212> PRT
      <213> Eucalyptus grandis

      <400> 631
Gly Ser Lys Glu Leu Glu Ser Leu Glu Arg Gln Leu Asp Gly Ser Leu
 1               5                  10                  15
Lys Gln Ile Arg Ser Arg Arg Thr Gln Tyr Met Leu Asp Gln Leu Thr
            20                  25                  30
Asp Leu Gln His Arg Glu Gln Leu Leu His Glu Ala Asn Arg Thr Leu
        35                  40                  45
Asn Gln Arg Leu Met Glu Gly Tyr Gln Val Asn Ala Leu Gln Leu Asn
    50                  55                  60
Gln His Ala Glu Glu Val Gly Gly Tyr Gly His Pro Pro Pro Pro Pro
65                  70                  75                  80
Leu Pro Pro Gln Pro Leu Ala Gln Pro His Ser Glu Ala Phe Phe Ile
                85                  90                  95
Pro Trp Asn Val Asn Pro Leu Cys Lys Trp Asp Thr Ser Pro Ile Gln
            100                 105                 110
Cys

      <210> 632
```

<211> 393
<212> PRT
<213> Eucalyptus grandis

<400> 632
Met Val Glu Gly Glu Arg Asn Gly Asp Asp Asp Gly Ala Ser Gln Gly
1 5 10 15
Glu Gln Gln Trp Lys His Gln Gln Ala Leu Asp Arg Leu Gly Lys Tyr
20 25 30
Val Arg Tyr Thr Ala Glu Gln Val Glu Ala Leu Glu Arg Val Tyr Ser
35 40 45
Glu Cys Pro Lys Pro Ser Ser Leu Arg Arg Gln Gln Leu Ile Arg Glu
50 55 60
Cys Pro Ile Leu Ser Asn Ile Glu Pro Lys Gln Ile Lys Val Trp Phe
65 70 75 80
Gln Asn Arg Arg Cys Arg Glu Lys Gln Arg Lys Glu Ala Ser Arg Leu
85 90 95
Gln Thr Val Asn Arg Lys Leu Thr Ala Met Asn Lys Leu Leu Met Glu
100 105 110
Glu Asn Asp Arg Leu Gln Lys Gln Val Ser Gln Leu Val Cys Glu Asn
115 120 125
Gly Tyr Met Arg Gln Gln Leu His Thr Thr Ser Ala Thr Thr Thr Asp
130 135 140
Ala Ser Cys Asp Ser Val Val Thr Thr Pro Gln His Ser Leu Arg Asp
145 150 155 160
Ala Asn Asn Pro Ala Gly Leu Leu Ser Ile Ala Glu Glu Thr Leu Ala
165 170 175
Glu Phe Leu Ser Lys Ala Thr Gly Thr Ala Val Asp Trp Val Gln Met
180 185 190
Pro Gly Met Lys Pro Gly Pro Asp Ser Val Gly Ile Phe Ala Ile Ser
195 200 205
Gln Ser Cys Ser Gly Val Ala Ala Arg Ala Cys Gly Leu Val Ser Leu
210 215 220
Glu Pro Thr Lys Ile Val Glu Ile Leu Lys Asp Arg Thr Ser Trp Phe
225 230 235 240
Arg Asp Cys Arg Ser Leu Glu Val Phe Thr Met Phe Pro Ala Gly Asn
245 250 255
Gly Gly Thr Ile Glu Leu Val Tyr Thr Gln Ile Tyr Ala Pro Thr Thr
260 265 270
Leu Ala Pro Ala Arg Asp Leu Trp Thr Leu Arg Tyr Thr Thr Thr Leu
275 280 285
Glu Asn Gly Ser Leu Val Val Cys Glu Arg Ser Leu Ser Gly Ser Gly
290 295 300
Ala Gly Pro Asn Pro Ala Ser Ala Ala Gln Phe Val Arg Ala Glu Ile
305 310 315 320
Leu Pro Ser Gly Tyr Leu Ile Arg Pro Cys Glu Gly Gly Gly Ser Ile
325 330 335
Ile His Ile Val Asp His Leu Asn Leu Glu Ala Trp Ser Val Pro Glu
340 345 350
Val Leu Arg Pro Leu Tyr Glu Ser Ser Lys Val Val Ala Gln Arg Ile
355 360 365
Thr Ile Ala Ala Leu Arg Tyr Ile Arg Gln Ile Ala Gln Glu Thr Ser
370 375 380
Gly Glu Val Val Tyr Gly Leu Gly Arg
385 390

<210> 633
<211> 84
<212> PRT
<213> Eucalyptus grandis

<400> 633
Met Gly Ile Asp Asp Leu Cys Asn Thr Gly Leu Val Leu Ser Leu Gly
1 5 10 15
Leu Glu Thr Pro Phe Lys Ile Glu Ala Gln Arg Gln Ala Lys Gln Arg
20 25 30
Leu Asn Phe Glu Pro Ser Leu Thr Leu Cys Leu Ser Gly Thr Thr Lys
35 40 45
Ala Thr Arg Asp Glu Gln Pro Pro Ala Asp His Leu Tyr Arg Gln Ala
50 55 60
Ser Pro His Ser His Asn Ser Leu Ser Ala Val Ser Ser Phe Ser Ser
65 70 75 80
Pro Arg Val Lys

<210> 634
<211> 67
<212> PRT
<213> Eucalyptus grandis

<400> 634
Glu Ser Gly Glu Ala Arg Arg Leu Arg Asp Ser Leu Val Glu Met Ala
1 5 10 15
Asn Val Gly Lys Ser Pro Ser Met Leu Thr Glu Cys Gly Leu Ala Glu
20 25 30
Asn Ser Leu Val Ser Ile Ala Glu Arg Val Thr His His Arg Trp Ser
35 40 45
Trp Ser Glu Val Lys Tyr Leu Ser Asp Cys His Leu Met Ala Leu Asp
50 55 60
Ala Ser Leu
65

<210> 635
<211> 103
<212> PRT
<213> Eucalyptus grandis

<400> 635
Tyr Ser Glu Ala Ser Ser Asp Glu Gly Asn Gln Tyr Ser Thr Arg Glu
1 5 10 15
Glu Glu Gly Glu Ile Glu Glu Phe Glu Glu Asp Thr Tyr Ser Gly Ala
20 25 30
Pro Gly Ala Leu Pro Ile Asn Lys Asp Gln Ser Asp Glu Asp Val Pro
35 40 45
Ala Glu Glu Cys Asp Glu Tyr Pro Trp Thr Ser Glu Arg Thr Arg Asn
50 55 60
Asn His Leu Pro Glu Glu Ala Gly Phe Ser Gly Ser Ser Ala Asp Ser
65 70 75 80
Pro Arg Gly Ile Arg Met Ala Ser Pro Ser Ala Ser Ser Gln Lys Phe
85 90 95
Gly Ser Leu Ser Ala Leu Asp
100

<210> 636
<211> 299
<212> PRT
<213> Eucalyptus grandis

<400> 636
Met Ala Phe His Asn His Leu Ser His Gln Asp Leu Ser Ser Leu His
1 5 10 15
His Phe Ala Ala Asp Gln Gln Pro Pro Pro Pro Gln His Gln Gln Gln

```
                20                  25                  30
Gln Gln His Leu Pro Asp Ser Ser Ser Ser Val His His Gln Leu His
        35                  40                  45
His Ala Ala Gly Pro Asn Trp Leu Asn Thr Ala Leu Leu Arg Ser Asp
    50                  55                  60
Ala Ala Ala Ala Ala Ala Ala Ala Ala Gly Gly Asn Ser Phe Leu Asn
65                  70                  75                  80
Leu His Thr Ser Ser Asp Ser Ala Ala Ser Pro Gln Ala Gln Gln Gln
                85                  90                  95
Pro Pro Ala Thr Ser Ala Ser Ala Ala Ala Gly His His Gln Trp Leu
            100                 105                 110
Ser Arg Gln His Ser Ser Leu Leu Gln Arg Asn His Ser Glu Val Ile
        115                 120                 125
Asp Ala Asp Ser Ile Ile Asp Ser Ala Asp Leu Lys Glu Ser Val Ser
    130                 135                 140
Lys Gly Asp Gly Gly Gly Gly Gly Ala Ala Glu Ser Asn Trp Glu Asn
145                 150                 155                 160
Ala Lys Tyr Lys Ala Glu Ile Leu Ala His Pro Leu Tyr Glu Gln Leu
                165                 170                 175
Leu Ser Ala His Val Ala Cys Leu Arg Ile Ala Thr Pro Val Asp Gln
            180                 185                 190
Leu Pro Arg Ile Asp Ala Gln Leu Ala Gln Ser Gln His Val Val Ala
        195                 200                 205
Lys Tyr Ser Ala Met Ser Gln Gly Leu Val Ala Asp Asp Lys Glu Leu
    210                 215                 220
Asp Gln Phe Met Thr His Tyr Val Leu Leu Leu Cys Ser Phe Lys Glu
225                 230                 235                 240
Gln Leu Gln Gln His Val Arg Val His Ala Met Glu Ala Val Met Ala
                245                 250                 255
Cys Trp Glu Ile Glu Gln Ser Leu Gln Ser Leu Thr Gly Val Ser Pro
            260                 265                 270
Gly Glu Gly Thr Gly Ala Thr Met Ser Asp Asp Glu Asp Asp Gln Val
        275                 280                 285
Asp Ser Asp Ala Asn Leu Phe Asp Gly Ser Leu
    290                 295
```

<210> 637
<211> 91
<212> PRT
<213> Eucalyptus grandis

<400> 637

```
Met Gly Arg Arg Lys Ile Glu Ile Gln Pro Ile Thr His Glu Arg Asn
 1              5                   10                  15
Arg Ser Val Thr Phe Leu Lys Arg Lys Asn Gly Leu Phe Lys Lys Ala
            20                  25                  30
Tyr Glu Leu Gly Val Leu Cys Ser Val Asp Val Ala Val Ile Ile Phe
        35                  40                  45
Glu Asp Arg Pro Gly His Ser Pro Lys Leu Tyr Gln Tyr Ser Ser Arg
    50                  55                  60
Gly Ile Gln Asp Ile Val Gln Arg His Leu His His Asp Gly Glu Thr
65                  70                  75                  80
Asp Asn Arg Gly Pro Gly Asp Phe Ser Gly Ala
                85                  90
```

<210> 638
<211> 129
<212> PRT
<213> Eucalyptus grandis

<400> 638

```
Met Phe Ser Thr Gly Glu Tyr Ser Ala Ala Ala Phe Glu Gly Met Asp
 1               5                  10                  15
Ser Leu Pro Ser Pro Arg Lys Lys Lys Asn Gln Leu Val Asn Arg Arg
            20                  25                  30
Arg Phe Ser Asp Glu Gln Ile Arg Ser Leu Glu Ser Ile Phe Glu Ser
        35                  40                  45
Glu Ser Arg Leu Glu Pro Arg Lys Lys Leu Gln Leu Ala Arg Glu Leu
    50                  55                  60
Gly Leu Gln Pro Arg Gln Val Ala Ile Trp Phe Gln Asn Lys Arg Ala
65                  70                  75                  80
Arg Trp Lys Ser Lys Gln Leu Glu Arg Asp Phe Ala Ile Leu Arg Ala
            85                  90                  95
Asn Tyr Asn Ala Leu Tyr Ser Arg Phe Glu Ser Leu Lys Lys Glu Lys
            100                 105                 110
Gln Ser Leu Val Thr Gln Ile Glu Lys Leu Asn Gln Leu Val Glu Lys
        115                 120                 125
Pro
```

<210> 639
<211> 101
<212> PRT
<213> Eucalyptus grandis

<400> 639

```
Met Leu Tyr Arg Gly Gly Met Arg Thr Pro Asn Ala Gln Gln Ile Glu
 1               5                  10                  15
Gln Ile Thr Ala Gln Leu Ser Lys Tyr Gly Lys Ile Glu Gly Lys Asn
            20                  25                  30
Val Phe Tyr Trp Phe Gln Asn His Lys Ala Arg Glu Arg Gln Lys Gln
        35                  40                  45
Lys Arg Asn Ser Leu Gly Leu Ser His Cys Ser Arg Thr Pro Thr Thr
    50                  55                  60
Ala Ala Thr Ile Ala Thr Val Thr Leu Asn Thr Thr Lys Val His Arg
65                  70                  75                  80
Thr Ile Leu Pro Tyr Phe Phe Pro His Ser Gly Ile Gly Val Arg Ala
            85                  90                  95
Leu His Asp Ala Cys
            100
```

<210> 640
<211> 85
<212> PRT
<213> Eucalyptus grandis

<400> 640

```
Thr Pro Ser Ser Pro Ala Ser Asp Gln Ile Leu Ser Ser Cys Thr Pro
 1               5                  10                  15
Gln Asp Phe His Gly Val Ala Ser Leu Leu Gly Lys Arg Ser Met Ser
            20                  25                  30
Phe Thr Gly Ile Asp Val Gly Asp Asp Pro Asn Ile Asn Asn Gly Asn
        35                  40                  45
Val Asn Gly Glu Glu Asp Leu Ser Glu Asp Asp Gly Ser Gln Pro Gly
    50                  55                  60
Gly Glu Lys Lys Arg Arg Leu Asn Met Glu Gln Val Lys Thr Leu Glu
65                  70                  75                  80
Lys Asn Phe Glu Leu
                85
```

<210> 641
<211> 162

<212> PRT
<213> Eucalyptus grandis

<400> 641
Gly Lys Ala Thr Ala Ser Gly Gly Gly Gly Gly Tyr Met Ser Ser Pro
1 5 10 15
Val Pro Leu Gly Pro Phe Thr Gly Tyr Ala Ser Ile Leu Lys Gly Ser
20 25 30
Arg Phe Leu Arg Pro Ala Gln Gln Leu Leu Glu Glu Leu Cys Glu Ala
35 40 45
Gly Arg Ala Ile Cys Thr Glu Lys Met Thr Asp Asp Ser Cys Ala Met
50 55 60
Thr Glu Pro Ala Met Asp Ser Leu Ser Gly Gly Cys Gly Ile Gly Met
65 70 75 80
Asp Asp Gly Cys Gly Gly Asp Gly Gly Glu Phe Arg Arg Lys Lys Ser
85 90 95
Arg Leu Ile Ser Met Leu Asp Glu Val Cys Arg Arg Tyr Lys Gln Tyr
100 105 110
Cys Gln Gln Met Gln Ala Val Val Ala Ser Phe Glu Cys Val Ala Gly
115 120 125
Leu Ser Asn Ala Ala Pro Tyr Ala Asn Leu Ala Leu Lys Ala Met Ser
130 135 140
Lys His Phe Lys Cys Leu Lys Asn Ala Ile Ala Asp Gln Leu Gln Phe
145 150 155 160
Thr Asn

<210> 642
<211> 155
<212> PRT
<213> Eucalyptus grandis

<400> 642
Met Gly Gln Gln Ser Leu Ile Tyr Ser Phe Val Ala Arg Gly Thr Val
1 5 10 15
Ile Leu Ala Glu Tyr Thr Glu Phe Thr Gly Asn Phe Thr Ser Ile Ala
20 25 30
Ser Gln Cys Leu Gln Lys Leu Pro Ala Thr Asn Asn Lys Phe Thr Tyr
35 40 45
Asn Cys Asp Gly His Thr Phe Asn Tyr Leu Val Glu Asn Gly Phe Thr
50 55 60
Tyr Cys Val Val Ala Ala Glu Ser Ala Gly Arg Gln Ile Pro Ile Ala
65 70 75 80
Phe Leu Glu Arg Ile Lys Asp Asp Phe Asn Lys Arg Tyr Gly Gly Gly
85 90 95
Lys Ala Thr Thr Ala Ala Ala Asn Ser Leu Asn Arg Glu Phe Gly Pro
100 105 110
Lys Leu Lys Glu His Met Gln Tyr Cys Val Asp His Pro Glu Glu Ile
115 120 125
Ser Lys Leu Ala Lys Val Lys Ala Gln Val Ser Glu Val Lys Gly Val
130 135 140
Met Met Glu Asn Ile Glu Lys Val Leu Asp Arg
145 150 155

<210> 643
<211> 54
<212> PRT
<213> Eucalyptus grandis

<400> 643
Glu Trp Trp Ser Val His Asn Lys Trp Pro Tyr Pro Thr Glu Ala Asp

1 5 10 15
Lys Ile Ala Leu Ala Lys Ser Thr Gly Leu Asp Gln Lys Gln Ile Asn
20 25 30
Asn Trp Phe Ile Asn Gln Arg Lys Arg His Trp Lys Pro Ser Glu Ile
35 40 45
Thr His Tyr Lys Val Ile
50

<210> 644
<211> 308
<212> PRT
<213> Eucalyptus grandis

<400> 644
Met Ala Met Gln Thr Gly Ile Gly Leu Ser Lys Ile Leu Val Leu Ala
1 5 10 15
Gly Ala Gly Tyr Thr Gly Thr Ile Leu Phe Gln Asn Gly Lys Leu Ser
20 25 30
Asp Leu Leu Gly Glu Leu Gln Gly Leu Val Lys Gly Leu Glu Lys Ser
35 40 45
Gly Ser Gln Ser Asp Gly Asp Lys Asp Tyr Ser Asp Ala Val Ala Ala
50 55 60
Gln Val Arg Arg Leu Ala Met Glu Val Arg Gln Leu Ala Ser Ala Arg
65 70 75 80
Gln Ile Thr Val Leu Asn Gly Asn Ser Ser Gln Met Gly Asn Leu Thr
85 90 95
Asn Met Val Val Pro Ala Ala Thr Leu Gly Ala Leu Gly Tyr Gly Tyr
100 105 110
Met Trp Trp Lys Gly Leu Ser Phe Ser Asp Leu Met Tyr Val Thr Lys
115 120 125
Arg Gly Met Ala Asn Cys Val Ala Asn Leu Thr Gln His Leu Glu His
130 135 140
Val Ser Glu Ala Leu Asn Ser Val Lys Lys His Leu Thr Gln Arg Ile
145 150 155 160
Glu Asn Leu Asp Gly Lys Met Asp Asp Gln Arg Glu Leu Ser Lys Glu
165 170 175
Ile Lys Asn Glu Val Ser Ser Val Lys Ala Asn Leu Asp Gly Leu Gly
180 185 190
Asp Asp Leu Asp Phe Leu Gln Arg Met Val Ser Gly Leu Asp Val Arg
195 200 205
Met Gly Ser Leu Glu Tyr Lys Gln Asp Trp Ala Asn Glu Gly Val Arg
210 215 220
Tyr Leu Cys Gly Val Ala Ser Gly Gln Lys Val Glu Met Pro Lys Met
225 230 235 240
Leu Gln Glu Gln Ile Lys Ile Ser Gly Thr Ser Arg Gly Leu Leu Ser
245 250 255
Tyr Gln Asp Thr Pro Ser Leu Lys Gly Leu Lys Glu Ile Ala Asp Ala
260 265 270
Leu Thr Leu Ser Ile Asp Arg Ser Ala Ser Asp Ala Val Val Gln Asp
275 280 285
Gly Val Glu Arg Leu Asn Gly Lys Pro Lys Pro Leu Pro Arg Ala Ser
290 295 300
Ser Thr Thr Cys
305

<210> 645
<211> 197
<212> PRT
<213> Eucalyptus grandis

<400> 645

Met Glu Glu Tyr Gly Gln Met Asn Glu Asn Ser Ser Thr Gly Ser Arg
1 5 10 15
Gly Asn Asn Ser Phe Leu Tyr Ala Ser Pro Val Leu Gly Pro Ser Ser
20 25 30
Ser Gly Asn Ser Asn Tyr Gly Arg Gly Asn Ser Ser Gly Gly His Phe
35 40 45
Tyr Ser Gln Ser Gly Asp His Cys Phe Gln Ser Glu Ala Pro Pro His
50 55 60
Pro Val Val Lys Thr Glu Ala Thr Thr Ser His His Gly His Ala Gln
65 70 75 80
Lys Phe His His Tyr Ser Leu Val Arg Asp His His Asp Pro Ser Ala
85 90 95
Ser His His His His His Gln His His Gln His Gln Gln Leu Gln Thr
100 105 110
Ala Ser Glu Ser Ser Arg Glu Val Asp Ala Met Lys Ala Lys Ile Ile
115 120 125
Ala His Pro Gln Tyr Ser Asn Leu Leu Glu Ala Tyr Met Asp Cys Gln
130 135 140
Lys Val Gly Ala Pro Pro Glu Val Val Ala Lys Leu Ser Val Ala Arg
145 150 155 160
Gln Glu Phe Glu Ser Arg Gln Arg Ser Ser Val Ala Ser Ala Asp Gly
165 170 175
Ser Lys Asp Pro Glu Leu Asp Gln Phe Met Glu Ala Tyr Tyr Asp Met
180 185 190
Leu Val Lys Tyr Arg
195

<210> 646
<211> 304
<212> PRT
<213> Eucalyptus grandis

<400> 646
Glu Glu Gly Glu Asp Glu Gln Val Leu Gln Pro Lys Ile Lys Arg Lys
1 5 10 15
Arg Ser Leu Arg Val Arg Pro Arg His Thr Met Glu Arg Pro Glu Glu
20 25 30
Lys Ser Ser Asn Gly Ala Leu Pro Val Gln Cys Gly Asp Ser Ala Phe
35 40 45
Leu Pro Leu Gln Met Asp His Lys Tyr Gln Pro Gln Ser Arg Thr Ala
50 55 60
Ser Glu Thr Asn Pro Phe Gly Glu Pro Thr Ala Ser Lys His Gly His
65 70 75 80
Gly Gly Pro Ser Met Lys Ser Lys Arg Gln Thr Ser Leu Arg Arg Ile
85 90 95
Asn Asp Pro Ser Lys Leu His Pro Leu Pro Lys Ser Ser Arg Ser Asn
100 105 110
His Ile Ser Ser Ser Asp Ala Ala Ala Glu Arg Ser Arg Glu Asn Trp
115 120 125
Asn Gly Arg Val Ala Asn Pro Ser Gly Asn Ser Ser Val Gly Ala Gly
130 135 140
Leu Ser Glu Ile Ile Gln Arg Lys Cys Lys Asn Val Val Ser Lys Leu
145 150 155 160
Gln Arg Arg Ile Asp Lys Glu Gly His His Ile Val Pro Leu Leu Thr
165 170 175
Asp Leu Trp Lys Arg Met Gly Ser Pro Gly His Met Gly Gly Val Gly
180 185 190
Ser Asn Leu Leu Asp Leu Arg Lys Ile Asp Gln Arg Ile Glu Lys Leu
195 200 205
Glu Tyr Gly Asp Val Met Asp Leu Val Leu Asp Val Gln Leu Met Leu
210 215 220

Lys Gly Ala Met Gln Phe Tyr Gly Phe Ser His Glu Val Arg Ser Glu
225 230 235 240
Ala Arg Lys Val His Asp Leu Phe Phe Asp Ile Leu Lys Ile Ala Phe
245 250 255
Pro Asp Thr Asp Phe Glu Glu Val Arg Asn Ala Leu Ser Phe Ser Gly
260 265 270
Pro Gly Ala Ala Ser Gln Ser Ala Pro Ser Pro Lys Gln Ala Ser Ala
275 280 285
Gly Gln Ser Lys Arg His Arg Ala Leu Asn Glu Val Asp Ala Asp Lys
290 295 300

<210> 647
<211> 166
<212> PRT
<213> Eucalyptus grandis

<400> 647
Val Val Gly Lys Ala Leu Gln Lys Cys Ala Lys Ile Ser Thr Asp Leu
1 5 10 15
Lys Lys Ala Leu Tyr Gly Ser Ser Val Ala Ser Cys Glu His Tyr Ser
20 25 30
Glu Val Glu Ala Ser Ser Asn Arg Ile Val Thr Gln Asp Asp Val Asp
35 40 45
Ala Ala Cys Gly Ala Asp Asp Thr Asp Phe Gln Pro Val Leu Lys Pro
50 55 60
Tyr Gln Leu Val Gly Val Asn Phe Leu Leu Leu Leu His Arg Lys Gly
65 70 75 80
Val Gly Gly Glu Gly Gln Gly Val Leu Lys Tyr Asp Thr Ser Leu Ala
85 90 95
Asn Gly Ala Ser Leu Tyr Ser Met Gln Ala Ile Leu Ala Asp Glu Met
100 105 110
Gly Leu Gly Lys Thr Ile Gln Ala Ile Thr Tyr Leu Thr Leu Leu Lys
115 120 125
His Leu Asn Asn Asp Pro Gly Pro His Leu Val Val Cys Pro Ala Ser
130 135 140
Leu Leu Glu Asn Trp Glu Arg Glu Leu Lys Arg Trp Cys Pro Ser Phe
145 150 155 160
Ser Val Leu Gln Tyr His
165

<210> 648
<211> 142
<212> PRT
<213> Eucalyptus grandis

<400> 648
Met Phe Met Val Asp Asp His Ala Leu Cys Leu Ser Cys Asn Cys Thr
1 5 10 15
Phe Asn Ile Leu Ala Cys Cys Asn Cys Ser Tyr Pro Lys Asp Ser Asp
20 25 30
Lys His Met Leu Ala Lys Gln Ala Gly Leu Thr Arg Ser Gln Val Ser
35 40 45
Asn Trp Phe Ile Asn Ala Arg Val Arg Leu Trp Lys Pro Met Val Glu
50 55 60
Glu Met Tyr Leu Glu Glu Thr Lys Ser Arg Glu Gln Ala Gly Ser Glu
65 70 75 80
Asn Gly Thr Thr Arg Arg Ala Ala Thr Lys Ser Asn Lys Asp Ala Ala
85 90 95
Gly Leu Lys Ser Ala Ser Gln Glu Asp Asn Ala Phe Gly Met Asn Ser
100 105 110
Ser Ile Lys Ser Phe Gln Ser Ser Pro Asn Lys Ala Leu Asn Gln Ala

```
        115                 120                 125
Ala Ile Ser Pro Ser Glu Asn Ser Asn Ser Thr Ser Ser Thr
    130                 135                 140

      <210> 649
      <211> 131
      <212> PRT
      <213> Eucalyptus grandis

      <400> 649
Gly Ala Pro Ala Ser Gly Gln Ser Ser His Ala Leu Gln Val Glu Glu
 1               5                  10                  15
Thr Arg Asp Ser Pro Leu Gly Phe Val Val Lys Val Glu Asp Arg Leu
            20                  25                  30
Ser Ser Gly Ser Gly Gly Ser Ala Val Val Asp Glu Asp Gly Pro Gln
        35                  40                  45
Leu Val Asp Ser Gly His Ser Tyr Phe His Cys Asn Asp Tyr Pro Gly
    50                  55                  60
Ser Leu Val Ala Val Asn Gly Leu Gln Ser Glu Asp Asp Gly Ser Asp
65                  70                  75                  80
Asp Ser Arg Gly Tyr Cys Ser Glu Ile Phe Ala Ala Ala Glu Glu Pro
                85                  90                  95
His Gln Glu Gly Gly Val Pro Asn Gly Val Val Gly Val Ala Leu Val
            100                 105                 110
Leu Gly Phe Arg Leu Leu Val Cys Ser Arg Lys Trp Phe Lys Ser Asn
        115                 120                 125
Met Cys Ser
    130

      <210> 650
      <211> 152
      <212> PRT
      <213> Eucalyptus grandis

      <400> 650
Ser Arg Leu Gln Ala Val Asn Arg Lys Leu Thr Ala Met Asn Lys Leu
 1               5                  10                  15
Leu Met Glu Glu Asn Asp Arg Leu Gln Lys Gln Val Ser Gln Leu Val
            20                  25                  30
Tyr Glu Asn Ser Tyr Phe Arg Gln Gln Thr Gln Asn Ala Thr Leu Ala
        35                  40                  45
Thr Thr Asp Thr Ser Cys Glu Ser Val Val Thr Ser Gly Gln His His
    50                  55                  60
Leu Thr Pro Gln His Pro Pro Arg Asp Ala Ser Pro Ala Gly Leu Leu
65                  70                  75                  80
Ser Ile Ala Glu Glu Thr Leu Thr Glu Phe Leu Ser Lys Ala Thr Gly
                85                  90                  95
Thr Ala Val Glu Trp Val Gln Leu Pro Gly Met Lys Pro Gly Pro Asp
            100                 105                 110
Ser Ile Gly Ile Ile Ala Ile Ser His Gly Cys Thr Gly Val Ala Ala
        115                 120                 125
Arg Ala Cys Gly Leu Val Gly Leu Glu Pro Ser Arg Val Ala Glu Ile
    130                 135                 140
Leu Lys Asp Arg Pro Ser Trp Tyr
145                 150

      <210> 651
      <211> 151
      <212> PRT
      <213> Eucalyptus grandis
```

<400> 651
Asp Asp Val Cys Gly Gly Gly Lys Arg Pro Glu Arg Pro Phe Phe Cys
1 5 10 15
Thr Tyr Asp Gly Glu Glu Asn Gly Asp Asp Asp Tyr Asp Glu Tyr Leu
20 25 30
His Gln Pro Glu Lys Lys Arg Arg Leu Ser Ile Glu Gln Val Leu Tyr
35 40 45
Leu Glu Lys Ser Phe Glu Thr Asp Asn Lys Leu Glu Pro Asp Lys Lys
50 55 60
Val Gln Leu Ala Lys Glu Leu Gly Leu Gln Pro Arg Gln Val Ala Ile
65 70 75 80
Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys Thr Lys Gln Met Glu Lys
85 90 95
Asp Phe Asp Lys Leu Gln Ala Ser Phe Asn Cys Leu Lys Ser Asp Tyr
100 105 110
Glu Ser Leu Leu Asn Glu Lys Glu Lys Leu Lys Ala Glu Val Ile His
115 120 125
Leu Thr His Gln Leu Glu Gln Arg Ser Asn Gly Ile Leu Asn His Ser
130 135 140
Thr Tyr Leu Asn Asn Cys Thr
145 150

<210> 652
<211> 85
<212> PRT
<213> Eucalyptus grandis

<400> 652
Thr Ala Lys Leu Lys Ser Ser Ile Phe Leu Leu Pro Leu His Gln Arg
1 5 10 15
Leu Ile Leu Lys Lys Ile Glu Arg Gln Gln Val Phe Arg Asp Gly Phe
20 25 30
Leu Val Leu Leu Glu Gly Gly Leu Ala Met Gly Ile Glu Glu Ala Thr
35 40 45
Lys Arg Gln Ser Ile Phe Ser Tyr Pro Glu Asp Leu Tyr Asn Glu Glu
50 55 60
Tyr Tyr Asp Asp Gln Ala Pro Glu Lys Lys Arg Arg Leu Thr Pro Glu
65 70 75 80
Gln Val His Leu Leu
85

<210> 653
<211> 99
<212> PRT
<213> Eucalyptus grandis

<400> 653
Met Glu Trp Glu Lys Gln Glu Gln His His Pro His His His His His
1 5 10 15
Pro His His His Pro Gln Gln Gln Gln Gln His His Gln Gln Gln Gln
20 25 30
Gln Pro Gln Gln Gln Gln Gln Ala Lys Glu Ala Gln Gln Gln Gln Gln
35 40 45
Gln Gln Gly Gly Glu Gly Met Gly Asn Gly Thr Ala Ala Gly Asn Gly
50 55 60
Gly Gly Val Leu Tyr Val Lys Val Met Thr Asp Glu Gln Leu Glu Thr
65 70 75 80
Leu Arg Lys Gln Ile Ala Val Tyr Ala Ser Ile Cys Glu Gln Leu Val
85 90 95
Glu Met His

<210> 654
<211> 150
<212> PRT
<213> Eucalyptus grandis

<400> 654
Ala Arg Gly Pro Val Leu Leu Ala Glu Tyr Thr Glu Phe Ser Gly Asn
1 5 10 15
Phe Thr Ser Val Ala Ser Gln Cys Leu Gln Lys Leu Pro Ala Thr Ser
20 25 30
Asn Lys Phe Thr Tyr Asn Cys Asp Gly His Thr Phe Asn Tyr Leu Val
35 40 45
Asp Asp Gly Leu Thr Tyr Cys Val Val Ala Val Glu Ser Val Gly Arg
50 55 60
Gln Ile Pro Met Ala Phe Leu Glu Arg Ile Lys Glu Asp Phe Thr His
65 70 75 80
Arg Tyr Asp Ala Gly Lys Ala Ala Thr Ala Ser Ala Asn Ser Leu Asn
85 90 95
Arg Glu Phe Gly Pro Lys Leu Lys Glu His Met Gln Tyr Cys Val Asp
100 105 110
His Pro Glu Glu Ile Ser Lys Leu Ala Lys Val Lys Ala Gln Val Ser
115 120 125
Glu Val Lys Gly Val Met Met Glu Asn Ile Glu Lys Val Leu Asp Arg
130 135 140
Gly Glu Lys Ile Glu Leu
145 150

<210> 655
<211> 96
<212> PRT
<213> Eucalyptus grandis

<400> 655
Leu Gln Tyr Asp Trp His His Leu Ser Phe Cys Val Ile Ile Ser Val
1 5 10 15
Leu Asn Leu Gln Asn Thr Ile Asn Gly Ser Cys Ser Met Glu Ser Ile
20 25 30
Leu Glu Arg Tyr Glu Arg Tyr Thr Tyr Ala Glu Arg Gln Gln Val Ala
35 40 45
Thr Asp Ser Pro Gln Val Gln Gly Ser Trp Ser Leu Glu Tyr Pro Lys
50 55 60
Leu Val Ala Arg Ile Glu Val Leu Gln Arg Asn Ile Arg Asn Leu Ser
65 70 75 80
Gly Glu Glu Leu Asp Pro Leu Ser Leu Arg Glu Leu Gln Tyr Leu Glu
85 90 95

<210> 656
<211> 338
<212> PRT
<213> Eucalyptus grandis

<400> 656
Met Ala Thr Tyr Tyr His Gln Ser Ser Ser Asp Pro Asp Gly Ala Leu
1 5 10 15
Gln Thr Leu Val Leu Met Asn Pro Ala Ser Tyr Val His Tyr Ser Asp
20 25 30
Ala Pro Pro Pro His Gln Gln Pro Ser Ala Ile Phe Leu Asn Ser Ser
35 40 45
Thr Ala Gly Pro Pro Ala Ser Gln Thr Gln Gln Phe Val Gly Ile Pro
50 55 60

Leu Pro Gly Ser Ala Ala Asp Ser Gln Pro Ser Ser Met His Val Asn
65 70 75 80
His Asp Leu Ser Ser Met His Gly Phe Met Pro Arg Val Gln Tyr Asn
85 90 95
Leu Trp Ser Ser Leu Asp Pro Ser Thr Ala Ala Arg Glu Ala Ser Arg
100 105 110
Thr His Gln Gln Gln Gly Leu Ser Leu Ser Leu Ser Pro Gln Gln Pro
115 120 125
Pro Pro Thr Pro Ala Gly Tyr Arg Ser Phe Val Arg Ala Glu Arg Ser
130 135 140
Gly Asp Gly Ala Ala Gly Ser Gln His Pro Pro Ala Ile Ser Gly Gly
145 150 155 160
Glu Asp Val Arg Ile Ser Gly Gly Ser Pro Ser Ser Ala Ser Gly Val
165 170 175
Thr Asn Gly Ala Ala Val Gly Ser Gly Met Gln Gly Val Leu Leu Ser
180 185 190
Ser Lys Tyr Leu Lys Ala Ala Gln Glu Leu Leu Glu Glu Val Val Asn
195 200 205
Val Gly Asn Thr Gly Ile Lys Ala Glu Met Leu Lys Lys Ala Ser Gly
210 215 220
Gln Ser Lys Pro Gly Gly Glu Ser Ala Ala Leu Lys Glu Glu Gly Gly
225 230 235 240
Gly Asp Gly Ser Gly Lys Arg Gly Ala Glu Leu Ser Met Ala Glu Arg
245 250 255
Gln Glu Ile Gln Met Lys Lys Ala Lys Leu Ile Asn Met Leu Asp Glu
260 265 270
Val Glu Gln Arg Tyr Arg Gln Tyr His Asn Gln Met Gln Ile Val Ile
275 280 285
Ser Ser Phe Glu Gln Ala Ala Gly Ile Gly Ser Ala Arg Thr Tyr Thr
290 295 300
Ala Leu Ala Leu Gln Thr Ile Ser Lys Gln Phe Arg Cys Leu Lys Asp
305 310 315 320
Ala Ile Ala Gly Gln Ile Arg Ala Ala Asn Lys Ser Leu Gly Glu Glu
325 330 335
Asp Gly

<210> 657
<211> 123
<212> PRT
<213> Eucalyptus grandis

<400> 657
Val Glu Gln Val Gln Phe Leu Glu Lys Ser Phe Glu Val Glu Asn Lys
1 5 10 15
Leu Glu Pro Asp Arg Lys Ile Gln Leu Ala Lys Asp Leu Gly Leu Gln
20 25 30
Pro Arg Gln Val Ala Ile Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys
35 40 45
Thr Lys Gln Leu Glu Lys Asp Tyr Glu Thr Leu Gln Ala Ser Phe Asn
50 55 60
Thr Leu Lys Ser Asp Tyr Asp Thr Leu Ile Lys Glu Arg Asn Asp Leu
65 70 75 80
Lys Ala Glu Val Leu Asn Leu Thr Asp Lys Leu Leu His Lys Gly Asn
85 90 95
Glu Lys Glu Ser Ser Glu Ser Ser Ser Lys Ser Ser Gln Gly Leu Phe
100 105 110
Gln Asn Pro Ile Ala Asp Ser Val Ser Glu Asp
115 120

<210> 658

<211> 128
<212> PRT
<213> Eucalyptus grandis

<400> 658

```
Ala Ile Ile Ser Ser Asp Gln Met Glu Arg Arg Met Leu Glu Ala Ala
 1               5                  10                  15
Arg Lys Gly Asn Val His Glu Leu Glu Asp Leu Ile Ser Ser Asn Glu
            20                  25                  30
Leu Ile Leu Glu Glu Met Asp Leu Glu Gly Ala Gly His Thr Pro Leu
        35                  40                  45
His Val Ala Cys Val Ala Gly His Leu Asp Phe Val Arg Glu Leu Leu
    50                  55                  60
Lys Arg Thr Pro Lys Leu Ala Glu Lys Val Asn Thr Asp Gly Phe Ser
65                  70                  75                  80
Pro Leu His Ile Ala Ala Ala Arg Gly Asp Val Glu Ile Ala Arg Glu
                85                  90                  95
Leu Leu Thr Met Gly Pro His Leu Cys Ser Val Lys Gly Arg Glu Arg
            100                 105                 110
Arg Ile Pro Leu His Tyr Ala Ala Met Asn Gly Lys Val Asp Val Met
        115                 120                 125
```

<210> 659
<211> 159
<212> PRT
<213> Eucalyptus grandis

<400> 659

```
Arg Leu Ser Lys Asp Gln Ser Ala Val Leu Glu Glu Ser Phe Lys Glu
 1               5                  10                  15
His Asn Thr Leu Asn Pro Lys Gln Lys Leu Ala Leu Ala Lys Gln Leu
            20                  25                  30
Gly Leu Arg Pro Arg Gln Val Glu Val Trp Phe Gln Asn Arg Arg Ala
        35                  40                  45
Arg Thr Lys Leu Lys Gln Thr Glu Val Asp Cys Glu Tyr Leu Lys Arg
    50                  55                  60
Cys Cys Glu Ser Leu Thr Glu Glu Asn Arg Arg Leu Gln Lys Glu Val
65                  70                  75                  80
Gln Glu Leu Arg Ala Leu Lys Leu Ser Pro Gln Phe Tyr Met His Leu
                85                  90                  95
Ser Pro Pro Thr Thr Leu Thr Met Cys Pro Ser Cys Glu Arg Val Ala
            100                 105                 110
Ala Pro Ser Pro Pro Ser Ala Val Gly Arg Pro Leu Ala Ala Val Pro
        115                 120                 125
Ala His Pro Arg Pro Val Pro Leu Ile Asn Pro Trp Ala Pro Ala Ala
    130                 135                 140
Ala Leu Glu Ile Val Asp Pro Pro Gly Leu Gln Glu Phe Asp Ile
145                 150                 155
```

<210> 660
<211> 115
<212> PRT
<213> Eucalyptus grandis

<400> 660

```
Met Ala Arg Glu Lys Ile Lys Ile Lys Lys Ile Asp Asn Val Thr Ala
 1               5                  10                  15
Arg Gln Val Thr Phe Ser Lys Arg Arg Arg Gly Leu Phe Lys Lys Ala
            20                  25                  30
Gly Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Val Val Ile Phe
        35                  40                  45
```

Ser Ala Thr Gly Lys Leu Phe Glu Tyr Ser Ser Ser Ser Met Lys Asp
50 55 60
Thr Leu Glu Arg Tyr Thr Leu His His Asn Asn Leu Glu Asn Met Asp
65 70 75 80
Gln Pro Ser Leu Glu Leu Gln Leu Glu His Ser Asn Asn Met Arg Leu
85 90 95
Ser Lys Glu Val Ala Glu Lys Ser His Arg Leu Arg Gln Leu Arg Gly
100 105 110
Glu Asp Leu
115

<210> 661
<211> 118
<212> PRT
<213> Eucalyptus grandis

<400> 661
Gln Val Ala Val Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys Thr Lys
1 5 10 15
Gln Leu Glu Arg Asp Tyr Asp Tyr Leu Lys Ser Ser Tyr Asp Ser Leu
20 25 30
Leu Ser Asp Tyr Asp Ser Ile Leu Lys Glu Asn Glu Lys Leu Lys Leu
35 40 45
Glu Val Tyr Ser Leu Thr Glu Lys Leu Gln Gly Lys Glu Val Asp Gly
50 55 60
Ala Pro Met Thr Gly Pro Ser Glu Pro Ala Pro Leu Glu Glu Ala Asp
65 70 75 80
Val Gln Ala Val Gln Phe Ser Ala Lys Val Glu Asp Arg Leu Ser Thr
85 90 95
Arg Ser Gly Gly Ser Ala Val Ile Asp Glu Glu Gly Pro Gln Leu Val
100 105 110
Asp Ser Gly Asn Ser Tyr
115

<210> 662
<211> 74
<212> PRT
<213> Eucalyptus grandis

<400> 662
Met Glu Ala Gly Arg Phe Leu Phe Asp Pro Pro Ala Leu Gln Gly Asn
1 5 10 15
Ile Leu Phe Leu Asp Lys Gly Ser Arg Ser Met Met Gly Met Glu Glu
20 25 30
Ser Pro Lys Arg Arg Arg Phe Phe Cys Ser Pro Asp Glu Leu Phe Asp
35 40 45
Glu Glu Tyr Tyr Asp Glu Gln Met Pro Glu Lys Lys Arg Arg Leu Thr
50 55 60
Pro Glu Gln Val Leu Leu Leu Glu Lys Ser
65 70

<210> 663
<211> 152
<212> PRT
<213> Eucalyptus grandis

<400> 663
Met Tyr Gly Leu Cys Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly
1 5 10 15
Glu Glu Tyr Ser Glu Arg Ala Leu Met Ser Pro Glu Asn Leu Val Leu
20 25 30

Pro Ser Glu Tyr Gln Ala Trp Leu Cys Ser Ala Gly Phe Arg Asp Asn
35 40 45
Arg Ile Pro Met Tyr Gly Phe Gly Ser Glu Glu Phe Val Ser Ser Ala
50 55 60
Ser Gly Met Ser Glu Thr Ala Ser Val Thr Pro Asp Gln Glu Asp Ala
65 70 75 80
Ala Glu Thr Ala Ile Lys Ser Lys Ile Lys Ser His Pro Ser Tyr Pro
85 90 95
Arg Leu Leu His Ala Tyr Ile Asp Cys Gln Lys Val Gly Ala Pro Pro
100 105 110
Glu Val Val Gly Leu Leu Asp Glu Ile Arg Pro Glu Asn Gly Val Cys
115 120 125
Lys Arg Asp Ala Ala Val Ser Thr Cys Leu Gly Ala Asp Pro Glu Leu
130 135 140
Asp Glu Phe Met Glu Thr Tyr Thr
145 150

<210> 664
<211> 56
<212> PRT
<213> Eucalyptus grandis

<400> 664
Met Ala Leu Ala Met His Arg Glu Cys Ser Ser Lys Gln Met Asp Ala
1 5 10 15
Ser Lys Tyr Val Arg Tyr Thr Pro Glu Gln Val Glu Ala Leu Glu Arg
20 25 30
Val Tyr Asn Glu Cys Pro Lys Pro Ser Ser Leu Arg Arg Gln Gln Leu
35 40 45
Ile Arg Glu Cys Pro Ile Leu Cys
50 55

<210> 665
<211> 135
<212> PRT
<213> Eucalyptus grandis

<400> 665
Met Ala Gly Glu Glu Pro Tyr Ser Ala Asp Thr Asn Ser Asp Thr Phe
1 5 10 15
Ala Asp Glu Glu Thr Leu Ile Pro Ser Ser Ser Glu Ala Leu Glu Ser
20 25 30
Ala Trp Val Pro Thr Ser Ser Thr Ala His His Gly Ser Lys Ser Val
35 40 45
Val Asn Phe Glu Asp Val Cys Gly Gly Gly Asp Thr Asn Thr Ala Pro
50 55 60
Arg Pro Tyr Leu Arg Gln Ile Asp Leu Lys Glu Glu Ala Val Glu Glu
65 70 75 80
Asp Tyr Gly Asp Gly Asn Phe Gln Pro Pro Gly Lys Lys Arg Arg Leu
85 90 95
Ser Ala Asp Gln Val His Phe Leu Glu Arg His Phe Glu Val Glu Asn
100 105 110
Lys Leu Glu Pro Glu Arg Lys Ile Gln Leu Ala Lys Asp Leu Gly Leu
115 120 125
Gln Pro Arg Gln Val Ala Ile
130 135

<210> 666
<211> 226
<212> PRT
<213> Eucalyptus grandis

<400> 666

Ser Ala Ala Ser Leu Lys Ala Ser Pro Phe Gly Tyr Pro Gly Met Arg
1 5 10 15
Pro Thr Arg Phe Thr Gly Ser Gln Ile Ile Met Pro Leu Gly His Thr
20 25 30
Ile Glu His Glu Glu Met Leu Glu Val Ile Arg Leu Glu Gly His Ser
35 40 45
Leu Ala Gln Glu Asp Ala Phe Val Ser Arg Asp Ile His Leu Leu Gln
50 55 60
Ile Cys Ser Gly Ile Asp Glu Asn Ala Val Gly Val Cys Ser Glu Leu
65 70 75 80
Ile Phe Ala Pro Ile Asp Glu Met Phe Pro Asp Asp Ala Pro Leu Leu
85 90 95
Pro Ser Gly Phe Arg Ile Ile Pro Leu Asp Ser Lys Ser Ser Asp Val
100 105 110
Gln Asp Ser Leu Thr Thr Asn Arg Thr Leu Asp Leu Thr Ser Ser Leu
115 120 125
Glu Val Gly Pro Ala Ser Thr Asn Cys Val Gly Asp Val Ala Pro Ser
130 135 140
His Gly Ala Arg Ser Val Leu Thr Ile Ala Phe Gln Phe Pro Phe Asp
145 150 155 160
Ala Asn Thr Gln Asp Asn Val Ala Val Met Ala Arg Gln Tyr Val Arg
165 170 175
Ser Val Ile Ser Ser Val Gln Arg Val Ala Met Val Ile Ser Pro Ser
180 185 190
Gly Leu Gly Pro Ser Ile Asn Pro Lys Leu Ser Gln Gly Ser Pro Glu
195 200 205
Ala Leu Thr Leu Ala Asn Trp Ile Cys Gln Ser Tyr Arg His Val Leu
210 215 220
Ile Ile
225

<210> 667
<211> 147
<212> PRT
<213> Eucalyptus grandis

<400> 667

Val Leu Leu Arg Phe Leu Thr Thr Ala Thr Thr Ile Cys Asn Asn Asn
1 5 10 15
Ala Gly Gly Ser Gly Ser Gly Ser Gly Ser Gly Cys Phe Phe Met Asp
20 25 30
Asn Asp Val Lys Ala Lys Ile Met Ala His Pro His Tyr His Arg Leu
35 40 45
Leu Ser Ala Tyr Val Asn Cys Gln Lys Val Gly Ala Pro Pro Gly Val
50 55 60
Val Ala Lys Leu Glu Glu Ala Cys Ala Ser Ala Ala Ile Met Ala Gly
65 70 75 80
Asn Ser Gly Met Ser Asn Thr Gly Cys Ile Gly Glu Asp Pro Ala Leu
85 90 95
Asp Gln Phe Met Glu Ala Tyr Cys Glu Met Leu Thr Lys Tyr Glu Gln
100 105 110
Glu Leu Ser Lys Pro Phe Lys Glu Ala Met Leu Phe Leu Gln Arg Ile
115 120 125
Glu Cys Gln Phe Lys Ala Leu Thr Leu Gly Val Pro Ser Asp Ser Val
130 135 140
Ala Leu Ser
145

<210> 668

<211> 176
<212> PRT
<213> Eucalyptus grandis

<400> 668
Gly Ser Ser Lys Gly Val Gly Ile Pro Arg Leu Arg Phe Leu Asp Gln
1 5 10 15
Gln Leu Arg Gln Gln Arg Ala Leu Gln Gln Leu Gly Met Met Gln Gln
20 25 30
His Ala Trp Arg Pro Gln Arg Gly Leu Pro Glu Ser Ser Val Ser Ile
35 40 45
Leu Arg Ala Trp Leu Phe Glu His Phe Leu His Pro Tyr Pro Lys Asp
50 55 60
Ser Asp Lys Ile Leu Leu Ala Arg Gln Thr Gly Leu Thr Arg Ser Gln
65 70 75 80
Val Ser Asn Trp Phe Ile Asn Ala Arg Val Arg Leu Trp Lys Pro Met
85 90 95
Val Glu Glu Met Tyr Lys Glu Glu Ile Gly Asp Ala Glu Met Asp Ser
100 105 110
Asn Ser Ser Ser Asp Thr Ala Lys Pro Lys Thr Gly Asp Ile Lys Ser
115 120 125
Ser Met Glu Asp Arg Val Glu Glu Val Gln Gln Ser Ser Thr Ala Thr
130 135 140
Gln Arg Cys Ser Ser Gly Gln Leu Met Asp Ser Ser Phe Asp Arg Thr
145 150 155 160
Pro Asp Val Glu Met Ala Gly His Ser Val Gly Phe Asn Tyr Leu Asn
165 170 175

<210> 669
<211> 294
<212> PRT
<213> Eucalyptus grandis

<400> 669
Met Ser Glu Val Gln Val Thr Gln Met Lys Ser Asp Gly Thr Leu Glu
1 5 10 15
Glu Ser Gly Glu Ala Arg Arg Leu Arg Asn Ser Leu Glu Glu Met Ala
20 25 30
Asn Glu Gly Lys Ser Pro Ser Ile Leu Lys Glu Cys Gly Leu Pro Glu
35 40 45
Asn Ser Phe Val Ser Ile Pro Gln Lys Met Thr Glu Asn Arg Trp Ser
50 55 60
Trp Ser Glu Val Lys Tyr Leu Ser Asn Cys Leu Leu Leu Ala Leu Asp
65 70 75 80
Ala Ser Leu Glu His Ser Leu Leu Gly Ser Leu Met Asn Met Asp Arg
85 90 95
Tyr Ala Ala Ala Glu Ser Tyr His Lys Leu Ala Met Ala Phe Ala Pro
100 105 110
Val Pro Asp Leu His Ile Met Trp Leu Leu His Leu Cys Asp Ala His
115 120 125
Gln Glu Met Gln Ser Trp Ala Glu Ala Ala Gln Cys Ala Val Ala Val
130 135 140
Ala Gly Val Val Met Gln Ala Leu Val Ala Arg Asn Asp Gly Val Trp
145 150 155 160
Ser Lys Asp His Val Thr Ala Leu Arg Lys Ile Cys Pro Met Val Ser
165 170 175
Ser Glu Ile Ser Cys Glu Ala Ser Ala Ala Glu Val Glu Gly Tyr Gly
180 185 190
Ala Ser Lys Leu Thr Val Asp Ser Ala Val Lys Tyr Leu Gln Leu Ala
195 200 205
Asn Lys Leu Phe Ser Gln Ala Glu Leu Tyr His Phe Cys Ala Ser Ile

```
    210                 215                 220
Leu Glu Leu Val Ile Pro Val Tyr Lys Ser Arg Arg Ala Tyr Gly Gln
225                 230                 235                 240
Leu Ala Lys Cys His Thr Leu Leu Thr Asn Ile Tyr Glu Ser Ile Leu
                245                 250                 255
Glu Gln Glu Ser Ser Pro Ile Pro Phe Thr Asp Ala Thr Tyr Tyr Arg
            260                 265                 270
Val Gly Phe Tyr Gly Glu Lys Phe Gly Lys Leu Asp Arg Lys Glu Tyr
        275                 280                 285
Val Tyr Arg Glu Pro Arg
    290
```

<210> 670
<211> 144
<212> PRT
<213> Eucalyptus grandis

<400> 670

```
His Thr Lys Thr His His His His Ser Ile Ala Ile Ser Asn Pro Thr
 1               5                  10                  15
Lys Ser Met Ser Gln Asp Tyr His His Pro Ser Ile Phe Ala Phe Ser
            20                  25                  30
Asn Asn Gly Phe Glu Arg Pro Asp Val Ala Ala Ala Ser Ala Ala Ser
        35                  40                  45
Asp Gln Glu Gln Gln His His Val Ala Gln Gln Ile Cys Arg Asp Lys
    50                  55                  60
Leu Arg Val Gln Gly Phe Asp Gln Pro Pro Pro Pro Gln Leu Val Gly
65                  70                  75                  80
Met Glu Glu Glu Pro Gly Gly Leu Pro Ala Tyr Glu Thr Ala Gly Met
                85                  90                  95
Leu Ser Glu Met Phe Asn Phe Pro Pro Gly Gly Ala Ala Ala Ala Glu
            100                 105                 110
Leu Leu Glu Gln Pro Met Ala Ser Gly Tyr Arg Ala Ala Arg Pro Ser
        115                 120                 125
Leu Pro Thr Val Ser Gly Thr Ala Gln Lys Thr Gln Val Cys Ile Gly
    130                 135                 140
```

<210> 671
<211> 125
<212> PRT
<213> Eucalyptus grandis

<400> 671

```
Ile Val Asp His Met Asp Leu Glu Pro Trp Ser Val Pro Glu Val Leu
 1               5                  10                  15
Arg Pro Leu Tyr Glu Ser Ser Thr Leu Leu Ala Gln Arg Thr Thr Met
            20                  25                  30
Ala Ala Leu Arg Asn Leu Arg Gln Ile Ser Gln Glu Val Ser Gln Pro
        35                  40                  45
Asn Val Thr Gly Trp Gly Arg Arg Pro Ala Ala Leu Arg Ala Leu Gly
    50                  55                  60
Gln Arg Leu Ser Lys Gly Phe Asn Glu Ala Val Asn Gly Phe Met Asp
65                  70                  75                  80
Asp Gly Trp Ser Met Leu Glu Ser Asp Gly Val Asp Asp Val Thr Leu
                85                  90                  95
Leu Ile Asn Ser Ser Pro Ala Lys Met Ala Gly Val Asn Ile Ser Tyr
            100                 105                 110
Ala Ser Gly Phe Pro Ser Met Thr Ser Ala Val Leu Cys
        115                 120                 125
```

<210> 672

<211> 104
<212> PRT
<213> Eucalyptus grandis

<400> 672
Met Ala Thr Ala Phe Ala Gly Thr Gln Gln Lys Cys Lys Ala Cys Asp
1 5 10 15
Lys Thr Val Tyr Leu Val Asp Gln Leu Thr Ala Asp Asn Lys Val Phe
20 25 30
His Lys Ala Cys Phe Arg Cys His His Cys Lys Gly Thr Leu Lys Leu
35 40 45
Ser Asn Tyr Cys Ser Phe Glu Gly Val Leu Tyr Cys Lys Pro His Phe
50 55 60
Asn Gln Leu Phe Lys Met Thr Gly Ser Leu Asp Lys Ser Phe Glu Gly
65 70 75 80
Thr Pro Lys Thr Val Asn Arg Ser Ser Glu Gln Gly Gln Ser Asn Ala
85 90 95
Lys Val Ser Ser Met Phe Ala Gly
100

<210> 673
<211> 131
<212> PRT
<213> Eucalyptus grandis

<400> 673
Asp Asp Asp Glu Asp Asp Asp Leu Phe Gln Asp Arg Phe Ser Ile Ala
1 5 10 15
Tyr Asn Leu Asp Arg Glu Phe Gly Pro Arg Leu Lys Glu His Met Gln
20 25 30
Tyr Cys Met Ser His Pro Glu Glu Met Ser Lys Leu Ser Lys Leu Lys
35 40 45
Ala Gln Ile Ser Glu Val Lys Gly Ile Met Val Asp Asn Ile Glu Lys
50 55 60
Val Leu Asp Arg Gly Glu Arg Ile Glu Leu Leu Val Asp Lys Thr Glu
65 70 75 80
Asn Leu Gln Phe Gln Ala Asp Ile Phe Gln Arg Gln Gly Arg Gln Leu
85 90 95
Arg Arg Lys Met Trp Phe Gln Asn Leu Gln Met Lys Val Val Val Ala
100 105 110
Gly Ala Val Val Ile Val Ile Phe Leu Leu Trp Leu Ile Ala Lys Trp
115 120 125
Gly Ser Lys
130

<210> 674
<211> 90
<212> PRT
<213> Eucalyptus grandis

<400> 674
Met Ala Thr Ala Phe Ala Gly Thr Gln Gln Lys Cys Lys Ala Cys Asp
1 5 10 15
Lys Thr Val Tyr Leu Val Asp Gln Leu Thr Ala Asp Asn Lys Val Phe
20 25 30
His Lys Ala Cys Phe Arg Cys His His Cys Lys Gly Thr Leu Lys Leu
35 40 45
Ser Asn Tyr Cys Ser Phe Glu Gly Val Leu Tyr Cys Lys Pro His Phe
50 55 60
Asn Gln Leu Phe Lys Met Thr Gly Ser Leu Asp Lys Ser Phe Glu Gly
65 70 75 80

Thr Pro Lys Thr Val Asn Arg Ser Ser Glu
85 90

<210> 675
<211> 95
<212> PRT
<213> Eucalyptus grandis

<400> 675
Val Tyr Ala Pro Ile Asp Ser Thr Ala Met Thr Ile Ala Leu Ser Gly
1 5 10 15
Glu Asp Thr Ser Thr Val Gln Ile Leu Pro Ser Gly Phe Thr Ile Ser
20 25 30
Ser Asp Gly Arg Ile Gly Thr Ser Ser Ser Lys Pro Ala Gly Thr Leu
35 40 45
Leu Thr Val Ala Phe Gln Ile Leu Val Ser Ser His Ser Gly Pro Glu
50 55 60
Gln Leu Ser Val Glu Ser Val Ala Thr Val Asn Thr Leu Ile Ser Ala
65 70 75 80
Thr Val Gln Lys Ile Lys Ala Ala Leu Asn Trp Ser Ala Ala Glu
85 90 95

<210> 676
<211> 141
<212> PRT
<213> Eucalyptus grandis

<400> 676
Gln Met Glu Arg Ala Ala Arg Lys Gly Asn Ile His Glu Leu Asn Asp
1 5 10 15
Leu Ile Ser Ser Asn Glu Gln Ile Leu Glu Glu Met Ala Leu Glu Gly
20 25 30
Ala Gly His Thr Pro Leu His Ile Ala Cys Met Gly Gly His Leu Asp
35 40 45
Phe Ile Arg Glu Leu Leu Lys His Met Pro Lys Leu Ala Glu Lys Val
50 55 60
Asn Pro Cys Gly Phe Ser Pro Leu His Ile Ala Ala Ala Arg Gly Asp
65 70 75 80
Val Glu Ile Ala Lys Glu Leu Leu Lys Val Asn Thr Asp Leu Cys Ser
85 90 95
Val Glu Gly Arg Glu Arg Arg Ile Pro Leu His Asp Ala Val Ile His
100 105 110
Gly Glu Val Asp Val Met Glu Ile Leu Leu Ser Thr Ser Pro Glu Ser
115 120 125
Val Glu Lys Lys Thr Ala Arg Lys Glu Thr Val Leu His
130 135 140

<210> 677
<211> 121
<212> PRT
<213> Eucalyptus grandis

<400> 677
Pro Ser Asp Ile Phe Leu Leu Gln Leu Cys Asn Gly Val Asp Glu Asn
1 5 10 15
Ala Val Gly Thr Cys Ala Glu Leu Leu Phe Ala Pro Ile Asp Ala Ser
20 25 30
Phe Ser Asp Asp Ala Pro Ile Ile Pro Ser Gly Phe Arg Ile Ile Pro
35 40 45
Leu Asp Pro Gly Ser Asp Ala Phe Ser Pro Asn Arg Thr Leu Asp Leu
50 55 60

Ala Ser Ala Leu Asp Val Gly Pro Thr Gly Asn Lys Ala Val Gly Asp
65 70 75 80
Asn Ser Gly His Ser Gly Asn Thr Lys Ser Val Met Thr Ile Ala Phe
85 90 95
Gln Phe Ala Phe Glu Leu His Leu Gln Glu Asn Val Ala Ser Met Ala
100 105 110
Arg Gln Tyr Leu Arg Ser Ile Ile Ala
115 120

<210> 678
<211> 34
<212> PRT
<213> Eucalyptus grandis

<400> 678
Met Gly Ile Asp Asp Leu Cys Asn Thr Gly Leu Val Leu Ser Leu Gly
1 5 10 15
Leu Glu Thr Pro Phe Lys Ile Glu Ala Gln Arg Gln Ala Lys Gln Arg
20 25 30
Leu Asn

<210> 679
<211> 110
<212> PRT
<213> Eucalyptus grandis

<400> 679
Ile Asn Ala Pro Glu Ser Asp Pro Ser Leu Thr Pro Ala Ile Asn Arg
1 5 10 15
His Pro Phe Ser Glu Thr Gln Ala Thr Thr Leu Leu Gln Ala Thr Thr
20 25 30
Ala Met Ile Ser Ser Ala Val Gln Val Ala Gly Pro Ala His Ile Asp
35 40 45
Asp Pro Cys Arg Arg Ser Ile Gly Gly Ser Thr Gly Leu Gly Gly Ala
50 55 60
Thr Asp Ile Gly Ser Ala Leu Ile Arg Phe Gly Thr Ala Ala Ala Ala
65 70 75 80
Thr Gly Asp Val Ser Leu Thr Leu Gly Leu Arg His Ala Gly Asn Val
85 90 95
Pro Glu Lys Ser Ser Phe Ser Val Thr Asp Leu Gly Gly Cys
100 105 110

<210> 680
<211> 146
<212> PRT
<213> Eucalyptus grandis

<400> 680
Phe Asn Glu Gly Asn Gly Thr Pro Ser Lys Gln Lys Ile Lys Glu Ile
1 5 10 15
Thr Thr Glu Leu Ser Gln His Gly Gln Ile Ser Glu Thr Asn Val Tyr
20 25 30
Asn Trp Phe Gln Asn Arg Arg Ala Arg Ser Lys Arg Lys Met Gln Asn
35 40 45
Ala Thr Gly Asn Asn Thr Glu Ser Glu Ala Glu Ala Glu Val Glu Ser
50 55 60
Pro Lys Glu Met Lys Thr Lys Pro Glu Ile Phe Gln Ser Gln Gln Asn
65 70 75 80
Pro Val Ser Arg Asn Glu Asp Leu Cys Phe Gln Ser Pro Glu Ile Ser
85 90 95

Ser Asp Leu His Phe Ala Asp Ser Gln Thr Lys Val Glu Ser Met Val
100 105 110
Tyr Pro Asp Gly Ser Leu Arg Ser Arg Asn Arg Asn Leu Gly Gln Leu
115 120 125
Ser Phe Tyr Asp Ala Met Met Ser Asn Ser Gly Gly Leu Ala Gly Asn
130 135 140
Glu His
145

<210> 681
<211> 247
<212> PRT
<213> Eucalyptus grandis

<400> 681
Pro Ile Asp Glu Ser Phe Ala Asp Asp Ala Pro Leu Leu Pro Ser Gly
1 5 10 15
Phe Arg Val Ile Gln Leu Asp Pro Lys Thr Asp Gly Pro Ala Pro Thr
20 25 30
Arg Thr Leu Asp Leu Ala Ser Thr Leu Glu Val Gly Ser Gly Gly Ala
35 40 45
Arg Pro Thr Cys Glu Ala Asp Ala Ser Thr Tyr Asn Leu Arg Ser Val
50 55 60
Leu Thr Ile Ala Phe Gln Phe Val Phe Glu Asn His Leu Arg Asp Thr
65 70 75 80
Val Ala Ile Met Ala Arg Gln Tyr Val Arg Ser Val Val Gly Ser Val
85 90 95
Gln Arg Val Ala Met Ala Ile Ala Pro Ser Arg Leu Gly Gly His Leu
100 105 110
Gly Pro Lys Ser Leu Ser Gly Ser Pro Glu Ala Leu Thr Leu Ala Arg
115 120 125
Trp Ile Cys Arg Ser Tyr Arg Ile Cys Ala Gly Ala Glu Leu Leu Arg
130 135 140
Gly Asp Ser Gln Ala Gly Asp Ala Val Leu Lys Glu Phe Trp His His
145 150 155 160
Ser Asp Ala Ile Met Cys Cys Ser Val Asn Thr Asn Val Ala Ser Pro
165 170 175
Val Phe Thr Phe Ala Asn Gln Ala Gly Leu Asp Met Leu Glu Thr Thr
180 185 190
Leu Val Ala Leu Gln Asp Ile Met Leu Glu Lys Val Leu Asp Glu Gly
195 200 205
Gly Arg Lys Val Leu Ser Ser Glu Phe Pro Lys Ile Met Gln Gln Gly
210 215 220
Ile Ala Tyr Leu Pro Ala Gly Val Cys Ile Ser Ser Met Gly Arg Pro
225 230 235 240
Val Ala Tyr Glu Gln Ala Val
245

<210> 682
<211> 147
<212> PRT
<213> Eucalyptus grandis

<400> 682
Val Arg Leu Thr Lys Glu Gln Ser Ala Leu Leu Glu Glu Ser Phe Lys
1 5 10 15
Gln His Ser Thr Leu Asn Pro Lys Gln Lys Gln Ala Leu Ala Arg Gln
20 25 30
Leu Asn Leu Arg Pro Arg Gln Val Glu Val Trp Phe Gln Asn Arg Arg
35 40 45
Ala Arg Thr Lys Leu Lys Gln Thr Glu Val Asp Cys Glu Phe Leu Lys

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    50                      55                      60
Lys Cys Cys Glu Thr Leu Thr Asp Glu Asn Arg Arg Leu Gln Lys Glu
65                      70                      75                  80
Leu Gln Glu Leu Lys Ala Leu Lys Leu Ala Gln Pro Phe Tyr Met His
                    85                      90                      95
Met Pro Ala Ala Thr Leu Thr Met Cys Pro Ser Cys Glu Arg Ile Gly
            100                     105                     110
Ala Gly Pro Ser Val Asp Gly Ala Ala Pro Thr Lys Gly Pro Phe Ser
        115                     120                     125
Met Thr Thr Lys Ser His Leu Tyr Ser His His Phe Thr Asn Pro Ser
    130                     135                     140
Ala Ala Cys
145

      <210> 683
      <211> 121
      <212> PRT
      <213> Eucalyptus grandis

      <400> 683
Pro Leu Glu Phe His Asn Asp Val Arg Leu Thr Phe Ser Asn Ala Met
 1                  5                   10                  15
Thr Tyr Asn Pro Pro Ser Asn Asp Val His Leu Met Ala Asp Thr Leu
            20                  25                  30
Asn Lys Phe Phe Asp Ile Arg Trp Lys Thr Ile Glu Lys Lys Leu Val
        35                  40                  45
Val Gly Gly Pro Gln Pro Ser Ser Thr Lys Ser Ala Pro Pro Glu Glu
    50                  55                  60
Val Lys Ala Ala Lys Ser Thr Ala Leu Pro Lys Lys Arg Lys Met Ser
65                  70                  75                  80
Ser Gln Gln Glu Val Met Pro Ala Pro Leu Leu Gln Val Met Thr Asp
                85                  90                  95
Glu Glu Lys His Lys Leu Gly Gln Glu Leu Glu Ser Leu Leu Gly Glu
            100                 105                 110
Met Pro Glu Asn Ile Ile Asp Phe Leu
        115                 120

      <210> 684
      <211> 36
      <212> PRT
      <213> Eucalyptus grandis

      <400> 684
Met Gln Leu Tyr Ala Pro Thr Thr Leu Ala Pro Ala Arg Asp Phe Trp
 1                  5                   10                  15
Leu Leu Arg Tyr Thr Ser Val Met Glu Asp Gly Ser Leu Val Val Cys
            20                  25                  30
Glu Arg Ser Ile
        35

      <210> 685
      <211> 120
      <212> PRT
      <213> Eucalyptus grandis

      <400> 685
Arg Glu Leu Lys Thr Gln Leu Leu Arg Lys Tyr Ser Gly Tyr Leu Gly
 1                  5                   10                  15
Ser Leu Lys Gln Glu Phe Met Lys Lys Arg Lys Lys Gly Lys Leu Pro
            20                  25                  30
Lys Glu Ala Arg Gln Gln Leu Leu Asp Trp Trp Ser Arg His Tyr Lys
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        35                  40                  45
Trp Pro Tyr Pro Ser Glu Ser Gln Lys Leu Ala Leu Ala Glu Ser Thr
    50                  55                  60
Gly Leu Asp Gln Lys Gln Ile Asn Asn Trp Phe Ile Asn Gln Arg Lys
65                  70                  75                  80
Arg His Trp Lys Pro Ser Glu Asp Met Gln Phe Val Val Met Asp Ala
                85                  90                  95
Thr His Pro His Tyr Tyr Met Asp Asn Met Leu Gly Asn Pro Phe Pro
            100                 105                 110
Met Asp Ile Ser Pro Thr Leu Leu
        115                 120

      <210> 686
      <211> 93
      <212> PRT
      <213> Eucalyptus grandis

      <400> 686
Trp Pro Phe Lys Glu Pro Val Asp Ala Arg Glu Val Pro Asp Tyr Tyr
 1               5                  10                  15
Asp Ile Ile Lys Asp Pro Met Asp Leu Lys Thr Met Thr Lys Arg Val
            20                  25                  30
Glu Ser Glu Gln Tyr Tyr Val Thr Leu Glu Met Phe Ile Ala Asp Val
        35                  40                  45
Lys Arg Met Phe Ala Asn Ala Arg Thr Tyr Asn Ser Pro Asp Thr Ile
    50                  55                  60
Tyr Phe Lys Ile Ala Thr Arg Leu Glu Ala His Phe Gln Ser Lys Val
65                  70                  75                  80
Gln Ser Asn Leu Gln Ser Gly Ala Gly Lys Ile Gln Gln
                85                  90

      <210> 687
      <211> 185
      <212> PRT
      <213> Eucalyptus grandis

      <400> 687
Met Gly Arg Gly Lys Ile Glu Ile Lys Arg Ile Glu Asn Thr Thr Asn
 1               5                  10                  15
Arg Gln Val Thr Phe Cys Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
            20                  25                  30
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Val Phe
        35                  40                  45
Ser Ser Arg Gly Arg Leu Tyr Glu Tyr Ser Asn Asn Ser Ile Arg Ser
    50                  55                  60
Thr Ile Glu Arg Tyr Lys Lys Ala Asn Ser Asp Ser Ser Asn Thr Ser
65                  70                  75                  80
Thr Val Thr Glu Ile Asn Ala Gln Tyr Tyr Gln Gln Glu Ser Ala Lys
                85                  90                  95
Leu Arg Gln Gln Ile Gln Met Leu Gln Asn Ser Asn Arg His Leu Met
            100                 105                 110
Gly Asp Ser Leu Ser Ser Leu Ser Val Lys Glu Leu Lys Gln Leu Glu
        115                 120                 125
Asn Arg Leu Glu Arg Gly Ile Thr Arg Ile Arg Ser Lys Lys His Glu
    130                 135                 140
Met Leu Leu Thr Glu Ile Glu Tyr Leu Gln Lys Lys Glu Ile Glu Leu
145                 150                 155                 160
Glu Asn Glu Ser Val Phe Leu Arg Thr Lys Ile Ala Glu Val Asp Arg
                165                 170                 175
Ile Gln Gln Gly Asn Met Val Ala Ala
            180                 185
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<210> 688
<211> 130
<212> PRT
<213> Eucalyptus grandis

<400> 688
Met Gly Arg Gly Lys Ile Glu Ile Lys Arg Ile Glu Asn Ala Asn Ser
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Ser Gly Leu Leu Lys Lys Ala
20 25 30
Gln Glu Leu Ser Ile Leu Cys Asp Ala Glu Val Ala Val Ile Ile Phe
35 40 45
Ser Asn Thr Gly Lys Leu Tyr Glu Phe Ser Ser Ser Gly Met Lys Gln
50 55 60
Ile Leu Ser Arg Tyr Asn Arg Cys Gln Asp Ser Pro Glu Ser Thr Val
65 70 75 80
Val Glu Tyr Lys Pro Glu Ser Thr Lys Glu Asp Asp Lys Val Val Asp
85 90 95
Thr Leu Lys Asp Glu Ile Ala Glu Leu Gln Met Arg Gln Leu Arg Leu
100 105 110
Leu Gly Lys Asp Leu Asn Gly Leu Ser Ile Lys Glu Leu Gln His Leu
115 120 125
Glu Gln
130

<210> 689
<211> 117
<212> PRT
<213> Eucalyptus grandis

<400> 689
Leu Asp Thr Ala Leu Lys Arg Ile Arg Thr Arg Lys Asn Gln Leu Met
1 5 10 15
His Glu Ser Ile Ser Gln Leu Gln Lys Lys Glu Lys Ser Leu Gln Glu
20 25 30
Gln Asn Asn Val Leu Ser Lys Lys Ile Lys Glu Asn Glu Lys Val Met
35 40 45
Arg Glu Ser Gly Gln Trp Glu Gln Gln Thr Pro Ala Pro Thr Thr Ser
50 55 60
Ser Phe Met Leu Gln Pro Thr Leu Pro Leu Pro Ser Leu Thr Ile Gly
65 70 75 80
Asn Thr Phe Gln Thr Pro His Val Leu Gly Gly Ala Glu Gln Glu Glu
85 90 95
Arg Ser Gln Ala Arg Pro Ala Asn Thr Leu Met Pro Pro Trp Met Ile
100 105 110
Arg Arg Ser Asn Glu
115

<210> 690
<211> 140
<212> PRT
<213> Eucalyptus grandis

<400> 690
Tyr Leu Ser Asp Leu Met Ser Ser Gly His Lys His Lys Arg Arg Lys
1 5 10 15
Gln Leu Gln Thr Val Glu Leu Lys Val Arg Met Asp Cys Asp Gly Cys
20 25 30
Glu Leu Lys Val Arg Lys Ala Leu Ser Ser Leu Asp Gly Val Lys Thr
35 40 45

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Val Glu Ile Asn Arg Lys Gln Gln Lys Val Thr Val Asn Gly Tyr Val
    50                  55                  60
Asp Gln Asn Lys Val Leu Lys Arg Ala Lys Ser Thr Gly Lys Lys Ala
65                  70                  75                  80
Glu Ile Trp Pro Tyr Ile Pro Tyr Ser Val Val Ala His Gln Pro Tyr
                85                  90                  95
Ile Ala Gln Ser Tyr Asp Lys Lys Ala Pro Pro Gly His Val Arg Lys
            100                 105                 110
Val Glu Pro Thr Ala Thr Ser Ala Ile Val Thr Arg His Glu Asp Pro
        115                 120                 125
Tyr Met Thr Leu Phe Ser Asp Asp Asn Pro Asn Ala
    130                 135                 140

      <210> 691
      <211> 68
      <212> PRT
      <213> Eucalyptus grandis

      <400> 691
Arg Ile Glu Asn Lys Ile Asn Arg Gln Val Thr Phe Ala Lys Arg Lys
 1               5                  10                  15
Asn Gly Leu Leu Lys Lys Ala Tyr Glu Leu Ser Val Leu Cys Asp Ala
            20                  25                  30
Glu Val Ala Leu Ile Ile Phe Ser Ser Arg Gly Lys Leu His Glu Phe
        35                  40                  45
Cys Ser Gly Pro Arg Tyr Arg Val Phe Val Cys Tyr His Leu Phe Phe
    50                  55                  60
Ser Leu Met Leu
65

      <210> 692
      <211> 140
      <212> PRT
      <213> Eucalyptus grandis

      <400> 692
Ile Asn Ala Gly Arg Phe Asp Gln Arg Thr Thr His Glu Glu Arg Arg
 1               5                  10                  15
Leu Thr Leu Glu Thr Leu Leu His Asp Glu Glu Arg Tyr Gln Glu Thr
            20                  25                  30
Val His Asp Val Pro Ser Leu Gln Glu Val Asn Arg Met Ile Ala Arg
        35                  40                  45
Ser Glu Glu Glu Val Glu Leu Phe Asp Gln Met Asp Glu Glu Leu Asp
    50                  55                  60
Trp Thr Glu Glu Met Thr Asn Tyr Glu Leu Val Pro Lys Trp Leu Arg
65                  70                  75                  80
Ala Ser Thr Lys Glu Val Asn Ala Ala Ile Ala Thr Leu Ser Lys Lys
                85                  90                  95
Pro Ser Lys Asn Thr Leu Phe Ala Ser Thr Ile Val Glu Pro Asn Glu
            100                 105                 110
Pro Val Ser Glu Ser Val Arg Lys Arg Gly Arg Pro Lys Ser Lys Lys
        115                 120                 125
His Pro Asn Tyr Lys Glu Leu Asp Asp Asp Asn Glu
    130                 135                 140

      <210> 693
      <211> 126
      <212> PRT
      <213> Eucalyptus grandis

      <400> 693
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Ala Ala Gln Leu Lys His Ser Cys Glu Leu Leu Gly Glu Lys Asp Gly
1 5 10 15
Ala Gly Ser Ser Gly Ile Thr Lys Gly Glu Thr Pro Arg Leu Lys Leu
20 25 30
Leu Asp Gln Ser Leu Arg Gln Gln Arg Ala Phe His Gln Met Gly Met
35 40 45
Met Glu Gln Glu Ala Trp Arg Pro Gln Arg Gly Leu Pro Glu Arg Ser
50 55 60
Val Asn Ile Leu Arg Ala Trp Leu Phe Glu His Phe Leu His Pro Tyr
65 70 75 80
Pro Ser Asp Ala Asp Lys His Leu Leu Ala Arg Gln Thr Gly Leu Ser
85 90 95
Arg Asn Gln Val Ser Asn Trp Phe Ile Asn Ala Arg Val Arg Leu Trp
100 105 110
Lys Pro Met Val Glu Glu Met Tyr Gln Gln Glu Ser Lys Glu
115 120 125

<210> 694
<211> 53
<212> PRT
<213> Eucalyptus grandis

<400> 694
Phe Cys Ser Met Leu Lys Thr Leu Glu Arg Tyr Gln Lys Cys Asn Tyr
1 5 10 15
Gly Ala Leu Glu Pro Asn Val Ser Ala Arg Glu Ser Leu Glu Leu Ser
20 25 30
Cys Gln Gln Glu Tyr Leu Arg Leu Lys Ala Arg Tyr Glu Ala Leu Gln
35 40 45
Arg Thr Gln Arg Tyr
50

<210> 695
<211> 86
<212> PRT
<213> Eucalyptus grandis

<400> 695
Lys Ile Glu Asp Val Arg Glu Glu Ile Leu Arg Lys Arg Arg Ala Gly
1 5 10 15
Lys Leu Pro Gly Asp Thr Thr Ser Val Leu Lys Asn Trp Trp Gln Gln
20 25 30
His Ser Lys Trp Pro Tyr Pro Thr Glu Asp Asp Lys Ala Lys Leu Val
35 40 45
Glu Glu Thr Gly Leu Gln Leu Lys Gln Ile Asn Asn Trp Phe Ile Asn
50 55 60
Gln Arg Lys Arg Asn Trp His Asn Asn Ser Gln Ser Val Thr Ser Leu
65 70 75 80
Lys Ser Lys Arg Lys Arg
85

<210> 696
<211> 99
<212> PRT
<213> Eucalyptus grandis

<400> 696
Pro Val Asp Ile Thr Gly Met Gln Ala Val Met Thr Gly Cys Asp Ser
1 5 10 15
Ser Asn Ile Ala Ala Leu Pro Ser Gly Phe Ser Ile Leu Pro Asp Gly
20 25 30

Ile Glu Ser Arg Pro Leu Val Ile Ser Ser Arg His Glu Glu Lys Ser
35 40 45
Ser Glu Gly Gly Ser Leu Leu Thr Ile Ala Phe Gln Ile Leu Thr Asn
50 55 60
Thr Ser Pro Thr Ala Lys Leu Thr Val Glu Ser Val Glu Ser Val Asn
65 70 75 80
Thr Leu Ile Ser Cys Thr Leu Arg Asn Ile Arg Thr Ser Leu Gln Cys
85 90 95
Glu Asp Gly

<210> 697
<211> 134
<212> PRT
<213> Eucalyptus grandis

<400> 697
Glu Asn Lys Ile Asn Arg Gln Val Thr Phe Ala Lys Arg Arg Asn Gly
1 5 10 15
Leu Leu Lys Lys Ala Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val
20 25 30
Ala Leu Ile Ile Phe Ser His Arg Gly Lys Leu Tyr Glu Phe Cys Ser
35 40 45
Ser Ser Ser Met Leu Lys Thr Leu Glu Arg Tyr Gln Lys Cys Asn Tyr
50 55 60
Gly Ala Pro Glu Pro Ser Ile Ser Thr Arg Glu Ala Gln Leu Glu Leu
65 70 75 80
Ser Ser Gln Gln Glu Tyr Leu Lys Leu Lys Ala Arg Tyr Glu Ala Leu
85 90 95
Gln Arg Thr Gln Arg Asn Leu Leu Gly Glu Glu Leu Gly Pro Leu Ser
100 105 110
Ser Lys Glu Leu Glu Ser Leu Glu Arg Gln Leu Asp Ser Ser Leu Lys
115 120 125
Gln Ile Arg Ser Thr Arg
130

<210> 698
<211> 145
<212> PRT
<213> Eucalyptus grandis

<400> 698
Met Gln Glu Pro Asn Leu Ala Met Met Gly Gly Gly Gly Gly Gly Gly
1 5 10 15
Gly Gly Gly Gly Gly Ile Val Gly Gly Gly Gly Gly Gly Leu Gly Ser
20 25 30
Glu Ala Ser Phe Ser Gly Asp His Pro Gln Arg Gln Leu Lys Gly Glu
35 40 45
Ile Ala Ser His Pro Met Tyr Glu Gln Leu Leu Ser Ala His Val Ala
50 55 60
Cys Leu Arg Val Ala Thr Pro Ile Asp Gln Leu Pro Leu Ile Asp Ala
65 70 75 80
Gln Leu Ala Gln Ser His His Leu Leu Arg Ser Tyr Ala Ser Ser Val
85 90 95
Gln His Gly His Ser Ser Leu Ser Pro His Asp Arg Gln Glu Leu Asp
100 105 110
His Phe Leu Ala Gln Tyr Leu Val Val Leu Cys Ser Phe Lys Glu Gln
115 120 125
Leu Gln Gln His Val Arg Val His Ala Val Glu Ala Val Met Ala Cys
130 135 140
Arg

145

<210> 699
<211> 160
<212> PRT
<213> Eucalyptus grandis

<400> 699
His Pro Asp Glu Lys Gln Arg Gln Gln Leu Ser Lys Gln Leu Gly Leu
1 5 10 15
Ala Pro Arg Gln Val Lys Phe Trp Phe Gln Asn Arg Arg Thr Gln Leu
20 25 30
Lys Ala Ile Gln Glu Arg His Glu Asn Ser Leu Leu Lys Thr Glu Met
35 40 45
Glu Lys Leu Arg Asp Glu Asn Lys Ala Met Arg Asp Thr Ile Gln Lys
50 55 60
Ser Cys Cys Pro Asn Cys Gly Ser Ala Thr Thr Ser Arg Asp Thr Ala
65 70 75 80
Leu Thr Thr Gln Glu Gln Gln Leu Arg Ile Glu Asn Ala Arg Leu Lys
85 90 95
Ala Glu Val Glu Lys Leu Arg Thr Ala Leu Gly Lys Tyr Thr Pro Gly
100 105 110
Thr Ala Ser Pro Ser Cys Ser Ala Gly Asn Asp Gln Glu Asn Arg Ser
115 120 125
Ser Leu Asp Phe Tyr Thr Gly Ile Phe Gly Leu Asp Lys Ser Lys Ile
130 135 140
Met Glu Leu Val Asn Gln Ala Met Glu Glu Leu Lys Lys Met Ala Thr
145 150 155 160

<210> 700
<211> 72
<212> PRT
<213> Eucalyptus grandis

<400> 700
Pro Thr Thr Arg Thr Pro Gly Thr Lys Lys Lys Lys Ser Ser Asn Lys
1 5 10 15
Lys Ser Leu Gln Gly Glu Arg Glu Arg Ala Arg Thr Gln Glu Thr Leu
20 25 30
Asn Leu Ser Ser Pro Val Ser Ser Lys Arg Ala Arg Glu Lys Glu Arg
35 40 45
Glu Arg Glu Arg Glu Arg Glu Arg Glu Gly Val Glu Val Glu Glu Arg
50 55 60
Ala Arg Glu Glu Glu Gly Val Tyr
65 70

<210> 701
<211> 205
<212> PRT
<213> Eucalyptus grandis

<400> 701
Leu Ile Arg Pro Cys Glu Gly Gly Gly Ala Ile Ile His Ile Val Asp
1 5 10 15
His Val Asp Leu Asp Ala Trp Ser Val Pro Glu Val Leu Arg Pro Leu
20 25 30
Tyr Glu Ser Ser Lys Ile Leu Ala Gln Lys Met Thr Val Ala Ala Leu
35 40 45
Arg His Ile Arg Gln Ile Ala Gln Glu Ser Ser Gly Glu Ile Gln Tyr
50 55 60
Gly Gly Ser Arg Gln Pro Ala Val Leu Arg Thr Phe Ser Gln Lys Leu

65 70 75 80
Cys Arg Gly Phe Asn Asp Ala Val Asn Gly Phe Val Asp Asp Gly Trp
85 90 95
Ser Val Leu Ser Ser Asp Gly Val Glu Asp Val Thr Ile Ala Val Asn
100 105 110
Ser Ser Pro Asn Lys Phe Leu Gly Ser Gln Tyr Asn Ala Thr Ile Phe
115 120 125
Pro Asn Phe Gly Arg Gly Val Leu Cys Ala Lys Ala Ser Met Leu Leu
130 135 140
Gln Asn Val Pro Pro Ala Val Leu Val Arg Phe Leu Arg Glu His Arg
145 150 155 160
Ser Glu Trp Ala Asp His Gly Ile Asp Ala Tyr Ser Ala Ala Ser Leu
165 170 175
Lys Thr Ser Ser Tyr Ala Ile Pro Cys Val Arg Pro Gly Gly Phe Pro
180 185 190
Ser Ser His Val Ile Leu Pro Leu Ala His Thr Val Glu
195 200 205

<210> 702
<211> 126
<212> PRT
<213> Eucalyptus grandis

<400> 702
Leu Phe Glu His Phe Leu His Pro Tyr Pro Lys Asp Ser Asp Lys Val
1 5 10 15
Met Leu Ala Lys Gln Thr Gly Leu Thr Arg Ser Gln Val Ser Asn Trp
20 25 30
Phe Ile Asn Ala Arg Val Arg Leu Trp Lys Pro Met Val Glu Glu Met
35 40 45
Tyr Thr Glu Glu Ile Lys Glu Gln Glu Gln Asn Gly Gly Gly Ala Glu
50 55 60
Glu Lys Pro Ser Lys Ser Glu Arg Glu Asp Ser Ala Ser Lys Ser Ser
65 70 75 80
Gly Leu Gln Asp Lys Ala Pro Asn Ser Asn Glu Asn Ser Thr Lys Ser
85 90 95
Phe Lys Pro Lys Glu Ile Thr Ser Arg Asn His Asp Thr Pro Ala Ile
100 105 110
Ser Thr Asn Ser Ala Ser Ser Ile Gly Gly Asn Val Arg Ser
115 120 125

<210> 703
<211> 116
<212> PRT
<213> Eucalyptus grandis

<400> 703
Asp Lys Leu Met Lys His Glu Tyr Gly Trp Val Phe Asn Thr Pro Val
1 5 10 15
Asp Val Lys Gly Leu Gly Leu His Asp Tyr Tyr Ser Ile Ile Lys His
20 25 30
Pro Met Asp Leu Gly Ser Val Lys Thr Arg Leu Asn Arg Asn Trp Tyr
35 40 45
Lys Ser Pro Lys Glu Phe Ala Glu Asp Val Arg Leu Thr Phe Arg Asn
50 55 60
Ala Met Thr Tyr Asn Pro Glu Gly Gln Asp Val His Val Met Ala Glu
65 70 75 80
Ile Leu Tyr Lys Ile Phe Glu Asp Arg Trp Ala Ile Ile Glu Ser Asp
85 90 95
Tyr Asn Arg Glu Met Arg Phe Ala Leu Asp Tyr Asp Met Gly Leu Pro
100 105 110

Thr Pro Thr Ser
        115

<210> 704
<211> 116
<212> PRT
<213> Eucalyptus grandis

<400> 704
Pro Ser Tyr Gly Asn Gly Tyr Ser Pro Pro Gln Tyr Gly Asn Gly Pro
1   5   10   15
Ala Tyr His Pro Met Pro Thr Tyr Tyr Pro Met Gly Tyr Arg Ile Cys
            20   25   30
Ala Gly Cys Asn Thr Glu Ile Gly His Gly Arg Phe Leu Ser Cys Met
        35   40   45
Asn Ala Val Trp His Pro Glu Cys Phe Cys Cys Arg Ala Cys Thr Leu
    50   55   60
Pro Ile Ser Asp Tyr Glu Phe Ser Leu Ser Gly Asn Tyr Pro Tyr His
65   70   75   80
Lys Ser Cys Tyr Lys Glu His Tyr His Pro Lys Cys Asp Val Cys Ser
                85   90   95
His Phe Ile Pro Thr Asn Leu Ala Gly Leu Ile Glu Tyr Arg Ala His
            100   105   110
Pro Phe Trp Ser
        115

<210> 705
<211> 96
<212> PRT
<213> Eucalyptus grandis

<400> 705
Thr Trp Pro Glu Asp Ile Cys Ser Val Lys Ser Asp Met Phe Asp Ser
1   5   10   15
Glu Ser Pro His Tyr Thr Asp Ala Ala His Ser Ser Leu Leu Glu Pro
            20   25   30
Gly Asp Ser Ser Tyr Ala Phe Glu Pro Asp His Ser Asp Leu Ser Gln
        35   40   45
Asp Glu Glu Asp Asn Leu Ser Lys Ser Leu Leu Ser Thr Arg Asn Tyr
    50   55   60
Pro Lys Leu Glu Asn Ser Asp Tyr Ala Ile Leu Pro Pro Asn Ser Cys
65   70   75   80
Asn Phe Gly Phe His Ala Glu Asp Pro Ala Phe Trp Pro Trp Ser Tyr
                85   90   95

<210> 706
<211> 149
<212> PRT
<213> Eucalyptus grandis

<400> 706
Glu Gly Lys Leu Gly His Ser Asn Ser Ser Asn Ser Leu Asp Asn Gly
1   5   10   15
Lys Tyr Val Arg Tyr Thr Pro Glu Gln Val Glu Ala Leu Glu Arg Leu
            20   25   30
Tyr His Glu Cys Pro Lys Pro Ser Ser Leu Arg Arg Gln Gln Leu Ile
        35   40   45
Arg Glu Cys Pro Ile Leu Ser Asn Ile Glu Pro Lys Gln Ile Lys Val
    50   55   60
Trp Phe Gln Asn Arg Arg Cys Arg Glu Lys Gln Arg Lys Glu Ala Ser
65   70   75   80

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Arg Leu Gln Ala Val Asn Arg Lys Leu Thr Ala Met Asn Lys Leu Leu
                85                  90                  95
Met Glu Glu Asn Asp Arg Leu Gln Lys Gln Val Ser Gln Leu Val Tyr
            100                 105                 110
Glu Asn Gly Tyr Phe Arg Gln His Thr Gln Asn Thr Thr Leu Ala Thr
        115                 120                 125
Lys Asp Thr Ser Cys Glu Ser Val Val Thr Ser Gly Gln His Gln Leu
    130                 135                 140
Thr Ser Gln His Pro
145

      <210> 707
      <211> 134
      <212> PRT
      <213> Eucalyptus grandis

      <400> 707
Glu Glu Asn Met Gln His Leu Lys Asp Glu Ala Ala Asn Met Met Lys
 1               5                  10                  15
Lys Ile Glu Leu Leu Glu Asp Ser Arg Arg Lys Leu Leu Gly Glu Gly
            20                  25                  30
Leu Gly Ser Cys Ser Ile Glu Glu Leu Gln Gln Ile Glu Gln Gln Leu
        35                  40                  45
Glu Arg Ser Val Ile Ser Ile Arg Ala Arg Lys Thr Gln Val Phe Lys
    50                  55                  60
Glu Gln Ile Asp Lys Leu Lys Glu Lys Glu Lys Met Leu Thr Ala Glu
65                  70                  75                  80
Asn Ala Ile Leu Thr Glu Lys Cys Gly Ile Lys Pro Pro Gln Arg Ala
                85                  90                  95
Asn Glu Cys Arg Asp Ser Pro Leu Leu Arg Glu Ser Thr Pro Ser Ser
            100                 105                 110
Glu Val Glu Thr Gly Leu Phe Ile Gly Pro Pro Glu Thr Arg Ser Arg
        115                 120                 125
Arg Leu Pro Phe Gln Asn
    130

      <210> 708
      <211> 124
      <212> PRT
      <213> Eucalyptus grandis

      <400> 708
Asp Lys Asp Pro Lys Arg Pro Val Arg Asp Pro Val Phe Ala Ala Val
 1               5                  10                  15
Pro Asp Lys Phe Val Ala Ser Met Met Lys Arg Cys Gly Leu Ile Leu
            20                  25                  30
Thr Lys Val Met Lys His Lys His Gly Trp Val Phe Asn Thr Pro Val
        35                  40                  45
Asp Ala Val Gly Leu Gly Leu His Asp Tyr His Gln Ile Ile Lys Asn
    50                  55                  60
Pro Met Asp Leu Gly Thr Val Lys Thr Asn Leu Glu Arg Asn Phe Tyr
65                  70                  75                  80
His Ser Pro Gln Glu Phe Ala Ala Asp Val Arg Leu Thr Phe Asn Asn
                85                  90                  95
Ala Leu Thr Tyr Asn Pro Lys Gly His Asp Val His His Met Ala Glu
            100                 105                 110
Thr Leu Leu Val Gln Phe Asp Gln Met Phe Asp Pro
        115                 120

      <210> 709
      <211> 126
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<212> PRT
<213> Eucalyptus grandis

<400> 709
Val Ser Leu Ser Arg Val Glu Lys His Ala Ser Ser Ala Met Asn Lys
1 5 10 15
Leu His Glu Ala Ala Met Lys Gly Asp Leu Ala Ala Leu Gln Asp Leu
20 25 30
Leu Leu Gln Asp Pro Gln Ile Leu His Lys Thr Thr Ser Ser Ser Ser
35 40 45
Asp Gly Thr Pro Leu His Val Ser Cys Leu Ser Gly His Ala Ser Phe
50 55 60
Thr Lys His Leu Leu Thr His Asn Pro Glu Leu Ala Lys Glu Ala Asp
65 70 75 80
Ser Arg Gly Ser Leu Pro Leu His Val Ala Cys Ala Lys Gly Asp Val
85 90 95
Glu Ile Val Arg Ala Leu Val Ala Val Asp Pro Ala Gly Cys Leu Arg
100 105 110
Tyr Asp Arg Glu Gly Arg Thr Pro Leu His Leu Ala Ala Ile
115 120 125

<210> 710
<211> 137
<212> PRT
<213> Eucalyptus grandis

<400> 710
Asp Asp Leu Asp Asn Glu Arg Ala Ser Ser Arg Gly Gly Gly Ser Asp
1 5 10 15
Glu Glu Asp Gly Asp Met Ser Arg Lys Lys Leu Arg Leu Ser Lys Asp
20 25 30
Gln Ser Ala Val Leu Glu Glu Ser Phe Lys Glu His Asn Thr Leu Asn
35 40 45
Pro Lys Gln Lys Leu Ala Leu Ala Lys Gln Leu Gly Leu Arg Pro Arg
50 55 60
Gln Val Glu Val Trp Phe Gln Asn Arg Arg Ala Arg Thr Lys Leu Lys
65 70 75 80
Gln Thr Glu Val Asp Cys Glu Tyr Leu Lys Arg Cys Cys Glu Ser Leu
85 90 95
Thr Glu Glu Asn Arg Arg Leu Gln Lys Glu Val Gln Glu Leu Arg Ala
100 105 110
Leu Lys Leu Ser Pro Gln Phe Tyr Met His Leu Phe Pro Ser Thr Thr
115 120 125
Leu Thr Met Cys Pro Phe Cys Glu Arg
130 135

<210> 711
<211> 104
<212> PRT
<213> Eucalyptus grandis

<400> 711
Ala Asp Tyr Asp Glu Gly Gly Asp Asp Asn Pro Gly Ser Arg His Pro
1 5 10 15
Val Thr Arg Gln Phe Phe Pro Val Glu Glu Glu Glu Glu Leu Glu Glu
20 25 30
Asp Gly Glu Arg Ala Gly Met Gly Gly Ala Ala Val Pro Pro Gly Phe
35 40 45
Pro Arg Ala His Trp Val Gly Val Arg Phe Arg Gln Ser Asp His His
50 55 60
Pro Ile Gly Ser Gly Lys Gly Ser Pro Ile Leu Glu Gly Ser Gln Pro

```
65                  70                      75                  80
Met Lys Lys Ile Arg Lys Gly Pro Arg Ser Arg Ser Ser Gln Tyr Arg
                85                  90                  95
Gly Val Thr Phe Tyr Arg Arg Thr
            100

      <210> 712
      <211> 138
      <212> PRT
      <213> Eucalyptus grandis

      <400> 712
Asp Asp Leu Asp Asn Glu Arg Ala Ser Ser Arg Gly Gly Gly Ser Asp
 1               5                  10                  15
Glu Glu Asp Gly Asp Met Ser Arg Lys Lys Leu Arg Leu Ser Lys Asp
            20                  25                  30
Gln Ser Ala Val Leu Glu Glu Ser Phe Lys Glu His Asn Thr Leu Asn
        35                  40                  45
Pro Lys Gln Lys Leu Ala Leu Ala Lys Gln Leu Gly Leu Arg Pro Arg
    50                  55                  60
Gln Val Glu Val Trp Phe Gln Asn Arg Arg Ala Arg Thr Lys Leu Lys
65                  70                  75                  80
Gln Thr Glu Val Asp Cys Glu Tyr Leu Lys Arg Cys Cys Glu Ser Leu
                85                  90                  95
Thr Glu Glu Asn Arg Arg Leu Gln Lys Glu Val Gln Glu Leu Arg Ala
            100                 105                 110
Leu Lys Leu Ser Pro Gln Phe Tyr Met His Leu Ser Pro Pro Thr Thr
        115                 120                 125
Leu Thr Met Cys Pro Ser Cys Glu Arg Val
    130                 135

      <210> 713
      <211> 128
      <212> PRT
      <213> Eucalyptus grandis

      <400> 713
Glu Ser Gln Lys Leu Met Glu Ala Val Gln Asn Gly Asp Val Ser Ala
 1               5                  10                  15
Ala Val Asp Leu Leu Asp Gln Asp Pro Leu Leu Leu Asp Arg Ile Ile
            20                  25                  30
Val Leu Gly Val Ser Asp Thr Pro Leu His Ala Ala Ser Val Leu Gly
        35                  40                  45
His Ala Asp Leu Val Arg Glu Leu Leu Arg Arg Ala Pro Arg Leu Ala
    50                  55                  60
Ser Glu Gln Asp Ser Arg Gly Asn Ser Pro Leu His Leu Ala Ala Gly
65                  70                  75                  80
Lys Gly His Gly Glu Ile Val Gly Glu Leu Leu Ser Ala Asp Pro Ala
                85                  90                  95
Ala Ala Ser Ala Arg Asn Leu Asp Gly Arg Ala Pro Ile His Val Ala
            100                 105                 110
Ala Ile Lys Gly Arg Val Asp Ala Val Gly Arg Met Val Gly Ala Val
        115                 120                 125

      <210> 714
      <211> 93
      <212> PRT
      <213> Eucalyptus grandis

      <400> 714
Tyr Ser Gly Tyr Leu Ser Ser Leu Lys Gln Glu Leu Ser Lys Lys Lys
```

1 5 10 15
Lys Lys Gly Lys Leu Pro Lys Glu Ala Arg Gln Lys Leu Leu Ser Trp
20 25 30
Trp Glu Leu His Tyr Lys Trp Pro Tyr Pro Ser Glu Thr Glu Lys Val
35 40 45
Ala Leu Ala Glu Ser Thr Gly Leu Asp Gln Lys Gln Ile Asn Asn Trp
50 55 60
Phe Ile Asn His Val Ile Glu Cys Trp Val Lys Ser Met Ala Thr Leu
65 70 75 80
Met Gln Glu Ile Phe Leu Met Thr Lys Val Ile Leu Arg
85 90

<210> 715
<211> 127
<212> PRT
<213> Eucalyptus grandis

<400> 715
Thr Phe Ser Phe Gly Ile Leu Lys Ala Gly Glu Gly Gly Asp Gly Val
1 5 10 15
Ala Asp Asp Glu Leu Gly Val Thr Arg Gln Leu Phe Pro Val Arg Glu
20 25 30
Val Asp Ala Asp Met Glu Trp Cys Gly Glu Ser Ser Ser Leu Asp Lys
35 40 45
Arg Ser Asp Val Phe Leu Val Gly Ala Cys Lys Glu Lys Glu Gly Pro
50 55 60
Arg Leu Ala Met Pro Gln Gln Arg Arg Lys Ser Arg Arg Gly Pro Arg
65 70 75 80
Ser Arg Ser Ser Gln Tyr Arg Gly Val Thr Phe Tyr Arg Arg Thr Gly
85 90 95
Arg Trp Glu Ser His Ile Trp Asp Cys Gly Lys Gln Val Tyr Leu Gly
100 105 110
Gly Phe Asp Thr Ala His Ala Ala Ala Arg Pro Met Ile Glu Leu
115 120 125

<210> 716
<211> 35
<212> PRT
<213> Eucalyptus grandis

<400> 716
Ser Glu Asp Met Gln Phe Met Val Met Asp Gly Leu His Pro Gln Gly
1 5 10 15
Ala Ala Leu Tyr Met Asp Gly His Tyr Ile Gly Asp Gly Pro Tyr Arg
20 25 30
Leu Gly Pro
35

<210> 717
<211> 179
<212> PRT
<213> Eucalyptus grandis

<400> 717
Ala Ala Phe Glu Gly Met Asp Ser Leu Pro Ser Pro Arg Lys Lys Lys
1 5 10 15
Asn Gln Leu Val Asn Arg Arg Arg Phe Ser Asp Glu Gln Ile Arg Ser
20 25 30
Leu Glu Ser Ile Phe Glu Ser Glu Ser Arg Leu Glu Pro Arg Lys Lys
35 40 45
Leu Gln Leu Ala Arg Glu Leu Gly Leu Gln Pro Arg Gln Val Ala Ile

```
    50                  55                  60
Trp Phe Gln Asn Lys Arg Ala Arg Trp Lys Ser Lys Gln Leu Glu Arg
65                  70                  75                  80
Asp Phe Ala Ile Leu Arg Ala Asn Tyr Asn Ala Leu Tyr Ser Arg Phe
                85                  90                  95
Glu Ser Leu Lys Lys Glu Lys Gln Ser Leu Val Thr Gln Ile Glu Lys
            100                 105                 110
Leu Asn Gln Leu Val Glu Lys Pro Gln Gly Glu Gly Gln Ser Cys Gly
        115                 120                 125
His Asp Leu Ala Thr Asn Ser Thr Asp Arg Glu Ser Asp Asn Gly Val
    130                 135                 140
Pro Lys Tyr Glu Asp Ser Gln Pro Val Phe Pro Asp Lys Leu Thr Arg
145                 150                 155                 160
Leu Met Gly Ile Pro Cys Glu Asp Asp Tyr Phe Gly Leu Lys Arg Ala
                165                 170                 175
Glu Pro Pro
```

<210> 718
<211> 142
<212> PRT
<213> Eucalyptus grandis

<400> 718

```
Asn Leu Thr Asp Lys Leu Leu His Lys Gly Asn Glu Lys Glu Ser Ser
 1               5                  10                  15
Glu Ser Ser Ser Lys Ser Ser Gln Gly Leu Phe Gln Asn Pro Ile Ala
            20                  25                  30
Asp Ser Val Ser Glu Asp Glu Val Ser Arg Val Pro Ile Pro Thr Trp
        35                  40                  45
Pro Glu Asp Ile Cys Ser Val Lys Ser Asp Met Phe Asp Ser Glu Ser
    50                  55                  60
Pro His Tyr Thr Asp Ala Ala His Ser Ser Leu Leu Glu Pro Gly Asp
65                  70                  75                  80
Ser Ser Tyr Ala Phe Glu Pro Asp His Ser Asp Leu Ser Gln Asp Glu
                85                  90                  95
Glu Asp Asn Leu Ser Lys Ser Leu Leu Ser Thr Arg Asn Tyr Pro Lys
            100                 105                 110
Leu Glu Asn Ser Asp Tyr Ala Ile Leu Pro Pro Asn Ser Cys Asn Phe
        115                 120                 125
Gly Phe His Ala Glu Asp Pro Ala Phe Trp Pro Trp Ser Tyr
    130                 135                 140
```

<210> 719
<211> 207
<212> PRT
<213> Eucalyptus grandis

<400> 719

```
Glu Lys Arg Thr Pro Lys Lys Arg Gly Arg Lys Pro Gly Leu Gly Arg
 1               5                  10                  15
Asp Thr Pro Leu Asn His Val Glu Ala Glu Arg Gln Arg Arg Glu Lys
            20                  25                  30
Leu Asn His Arg Phe Tyr Ala Leu Arg Ala Val Val Pro Asn Val Ser
        35                  40                  45
Arg Met Asp Lys Ala Ser Leu Leu Ser Asp Ala Val Ser Tyr Ile Asn
    50                  55                  60
Glu Leu Lys Ser Lys Ile Gly Asp Leu Glu Ser Gln Leu Gln Arg Glu
65                  70                  75                  80
Ser Lys Arg Val Lys Gln Glu Val Thr Asp Ala Thr Asp Asn Leu Ser
                85                  90                  95
```

```
Thr Thr Thr Ser Val Asp His Ser Ser Pro Ser Gly Cys Gly Gly Ser
            100                 105                 110
Leu Leu Glu Val Glu Val Lys Ile Val Gly Cys Asp Ala Met Ile Arg
        115                 120                 125
Val Gln Ser Glu Asn Ala Asn Tyr Pro Ser Ala Arg Leu Met Ala Ala
    130                 135                 140
Met Arg Asp Leu Glu Leu His Ile His His Ala Ser Leu Ser Thr Val
145                 150                 155                 160
Asn Asp Leu Met Leu Gln Asp Val Val Val Ser Val Pro Glu Gly Leu
                165                 170                 175
Lys Gly Glu Glu Asp Leu Arg Ala Ala Leu Leu Arg Ala Leu Glu Gln
            180                 185                 190
Arg Ser Glu Lys Leu Pro Gly Glu Arg Glu Arg Glu Tyr Val Leu
        195                 200                 205

      <210> 720
      <211> 128
      <212> PRT
      <213> Eucalyptus grandis

      <400> 720
Glu Asp Asp Lys Leu Gly Arg Asn Arg Ala Ser Ala Asn Val Val Gln
 1               5                  10                  15
Ser Ser Ser Val Lys Gly Arg Pro Ser Gly Gly Thr Leu Val Val Cys
            20                  25                  30
Pro Thr Ser Val Leu Arg Gln Trp Gly Asp Glu Leu Lys Asn Lys Val
        35                  40                  45
Ser Glu Lys Ala Lys Leu Ser Val Cys Met Tyr His Gly Thr Thr Arg
    50                  55                  60
Thr Lys Asp Pro Tyr Glu Leu Ala Asn Tyr Asp Val Val Leu Thr Thr
65                  70                  75                  80
Tyr Ser Ile Val Ser Met Glu Val Pro Lys Pro Ala Gly Phe Lys Asp
                85                  90                  95
Glu Lys Asp Ser Leu Gln Asp Asp Asp Asp Ala Phe Phe Gly Arg Lys
            100                 105                 110
Arg Lys His Ser Ala Lys Ser Glu Lys Arg Arg Leu Lys Lys Glu Met
        115                 120                 125

      <210> 721
      <211> 114
      <212> PRT
      <213> Eucalyptus grandis

      <400> 721
Phe Arg Leu Phe Ile Asn Trp Leu Leu Asp Phe Asn Ser Ala Asp Ser
 1               5                  10                  15
Ala Ile Asp Ser Ala His Phe Gln Ile Leu Thr Ala Phe Ala Asn Ala
            20                  25                  30
Phe His Ala Leu Gln Pro Leu Lys Val Pro Ala Phe Ser Phe Ala Trp
        35                  40                  45
Leu Glu Leu Val Ser His Arg Ser Phe Met Pro Lys Ile Leu Ser Gly
    50                  55                  60
Asn Ser Gln Lys Gly Trp Pro Tyr Phe Gln Arg Leu Leu Val Asp Leu
65                  70                  75                  80
Phe Gln Tyr Met Glu Pro Phe Leu Arg Asn Ala Glu Leu Gly Leu Pro
                85                  90                  95
Val His Phe Leu Tyr Lys Gly Thr Leu Arg Val Leu Leu Val Leu Leu
            100                 105                 110
His Asp
```

<210> 722
<211> 183
<212> PRT
<213> Eucalyptus grandis

<400> 722
Met Asn Arg Glu Arg Leu Met Lys Met Ala Gly Ser Val Arg Thr Gly
1   5   10   15
Gly Lys Gly Thr Met Arg Arg Lys Lys Lys Ala Val His Lys Thr Thr
            20   25   30
Thr Thr Asp Asp Lys Arg Leu Gln Ser Thr Leu Lys Arg Ile Gly Val
        35   40   45
Asn Ala Ile Pro Ala Ile Glu Glu Val Asn Ile Phe Lys Asp Asp Val
    50   55   60
Val Ile Gln Phe Leu Asn Pro Lys Val Gln Ala Ser Ile Ala Ala Asn
65   70   75   80
Thr Trp Val Val Ser Gly Ser Pro Gln Thr Lys Lys Leu Gln Asp Ile
                85   90   95
Leu Pro Gly Ile Ile Asn Gln Leu Gly Pro Asp Asn Leu Asp Asn Leu
            100   105   110
Arg Lys Leu Ala Glu Gln Phe Gln Lys Gln Val Pro Gly Ala Ala Thr
        115   120   125
Gly Ser Gly Ala Thr Gly Met Gln Asp Asp Asp Asp Asp Glu Val Pro
    130   135   140
Glu Leu Val Pro Gly Glu Thr Phe Glu Ala Ala Ala Glu Glu Gly Gln
145   150   155   160
Ala Thr Gln Val Thr Glu Ala Thr Gln Val Thr Glu Ala Thr Lys Val
                165   170   175
Thr Glu Ala Thr Pro Ala Ser
            180

<210> 723
<211> 54
<212> PRT
<213> Eucalyptus grandis

<400> 723
Gly Ser Cys Gln Lys Gly Asp Ser Cys Glu Tyr Ala His Gly Val Phe
1   5   10   15
Glu Ser Trp Leu His Pro Ala Gln Tyr Arg Thr Arg Leu Cys Lys Asp
            20   25   30
Glu Thr Gly Cys Ala Arg Lys Val Cys Phe Phe Ala His Lys Pro Glu
        35   40   45
Glu Leu Arg Pro Val Tyr
    50

<210> 724
<211> 124
<212> PRT
<213> Eucalyptus grandis

<400> 724
Met Ala Ser Ser Ser Gly Thr Ser Ser Gly Ser Thr Leu Ile Gln Asn
1   5   10   15
Ser Gly Ser Glu Glu Ser Leu Gln Ala Leu Met Asp Gln Arg Lys Arg
            20   25   30
Lys Arg Met Ile Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Met Arg
        35   40   45
Lys Gln Arg His Leu Asp Asp Leu Met Leu Val Val Ala Gln Leu Arg
    50   55   60
Lys Asp Asn Gln Gln Leu Arg Asp Asn Val Asn Val Val Asn Gln His

```
65                  70                       75                       80
Tyr Met Thr Leu Glu Thr Glu Asn Ser Ile Leu Arg Val Gln Met Asn
                85                       90                       95
Glu Leu Thr Asn Arg Leu Glu Ser Leu Lys Asp Ile Leu Gly Ile Leu
            100                     105                     110
Asp Ala Gly Asp Gly Gly Arg Pro Gly Asn Gly Gly
        115                     120

      <210> 725
      <211> 120
      <212> PRT
      <213> Eucalyptus grandis

      <400> 725
Met Thr Asp Gly His Leu Phe Asn Asn Ile Ser Leu Gly Gly Arg Gly
 1               5                  10                  15
Gly Ser Asn Pro Gly Gln Ile Lys Ile Phe Ser Gly Gly Ile Ser Trp
            20                  25                  30
Arg Arg Gln Gly Gly Gly Lys Ala Val Glu Val Asp Lys Ser Asp Ile
        35                  40                  45
Val Gly Val Thr Trp Met Lys Val Pro Arg Thr Asn Gln Leu Gly Val
    50                  55                  60
Arg Thr Lys Asp Gly Leu His Tyr Lys Phe Thr Gly Phe Arg Asp Pro
65                  70                  75                  80
Asp Val Ile Ser Leu Thr Asn Phe Phe Gln Asn Thr Cys Gly Leu Thr
                85                  90                  95
Pro Glu Glu Lys Gln Leu Ser Val Ser Gly Arg Asn Trp Gly Glu Val
            100                 105                 110
Asp Leu Ser Gly Asn Met Leu Thr
        115                 120

      <210> 726
      <211> 58
      <212> PRT
      <213> Eucalyptus grandis

      <400> 726
Arg Leu Gly Pro Met Gly Pro Lys Thr Leu Cys Asn Ala Cys Gly Ile
 1               5                  10                  15
Arg Tyr Lys Thr Gly Arg Leu Phe Pro Glu Tyr Arg Pro Ser Ala Ser
            20                  25                  30
Pro Thr Tyr Val Pro Ser Leu Asn Ile Val Ser Asn Glu Ile Pro Ser
        35                  40                  45
Ser His Leu Trp Leu Ser Leu Leu Gln Lys
    50                  55

      <210> 727
      <211> 78
      <212> PRT
      <213> Eucalyptus grandis

      <400> 727
Gly Val Ala Ile Asp Val Lys Ile Met Gly Trp Asp Glu Val Val Arg
 1               5                  10                  15
Val Glu Ser Gly Arg Lys Asp His Pro Ala Ala Arg Leu Met Val Ala
            20                  25                  30
Leu Gln Glu Leu Asn Leu Glu Leu Gln His Ala Ser Val Ser Val Val
        35                  40                  45
Asn Glu Leu Met Ile Gln Gln Ala Thr Val Lys Met Gly Ser Gln Leu
    50                  55                  60
Tyr Thr Gln Glu Gln Leu Lys Ala Ala Leu Leu Ala Val Ile
```

65 70 75

<210> 728
<211> 123
<212> PRT
<213> Eucalyptus grandis

<400> 728
Lys Pro Pro Met Lys Lys Gln Lys Ser Lys Pro Ala Ala Ala Ser Glu
1 5 10 15
Thr Ala Gly Pro Ala Arg Arg Cys Ser His Cys Gly Val Gln Lys Thr
20 25 30
Pro Gln Trp Arg Ala Gly Pro Asn Gly Ala Lys Thr Leu Cys Asn Ala
35 40 45
Cys Gly Val Arg Phe Lys Ser Gly Arg Leu Tyr Pro Glu Tyr Arg Pro
50 55 60
Ala Cys Ser Pro Thr Phe Ser Ser Glu Leu His Ser Asn His His Arg
65 70 75 80
Lys Val Leu Glu Met Arg Arg Lys Lys Glu Ser Met Thr Thr Thr Ala
85 90 95
Leu Gly Gln Pro Glu Pro Gly Arg Ala Arg Ala Gln Leu Leu Arg Ala
100 105 110
Arg Val Gly Ser Ser Trp Arg Pro Arg Glu Ile
115 120

<210> 729
<211> 213
<212> PRT
<213> Eucalyptus grandis

<400> 729
Ala Ala Gly Leu Leu Arg Cys Gly Lys Ser Cys Arg Leu Arg Trp Ile
1 5 10 15
Asn Tyr Leu Arg Pro Asp Leu Lys Arg Gly Asn Phe Thr Glu Glu Glu
20 25 30
Asp Glu Ile Ile Ile Lys Leu His Ser Leu Leu Gly Asn Lys Trp Ser
35 40 45
Leu Ile Ala Gly Arg Leu Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn
50 55 60
Tyr Trp Asn Thr His Ile Arg Arg Lys Leu Leu Asn Arg Gly Ile Asp
65 70 75 80
Pro Ala Thr His Arg Leu Ile Asn Glu Pro Ala Gln Asp His His Asp
85 90 95
Glu Pro Thr Ile Ser Phe Ala Ala Asn Ser Lys Glu Ile Lys Glu Met
100 105 110
Lys Asn Asn Ala Glu Leu Asn Phe Met Cys Asn Leu Glu Glu Ser Ala
115 120 125
Asp Val Ala Ser Ser Ala Arg Glu Arg Cys Pro Asp Leu Asn Leu Glu
130 135 140
Leu Gly Ile Ser Pro Pro Ser His Gln Leu His Gln Pro Glu Pro Leu
145 150 155 160
Leu Arg Phe Thr Gly Arg Lys Ser Asp Leu Cys Leu Glu Cys Asn Leu
165 170 175
Gly Leu Lys Asn Ser Gln Asn Cys Arg Cys Ser Val Gly Val Ile Glu
180 185 190
Ser Glu Thr Ser Val Gly Tyr Asp Phe Leu Gly Leu Lys Ala Ser Val
195 200 205
Leu Asp Tyr Arg Ser
210

<210> 730

```
    <211> 61
    <212> PRT
    <213> Eucalyptus grandis

    <400> 730
Met Ser Val Leu Ser Lys Ser Asp Ser Val Glu Ile Arg Glu Val Trp
1               5                   10                  15
Glu Tyr Asn Leu Glu Asp Glu Phe Ser Phe Ile Arg Glu Ile Val Asp
            20                  25                  30
Asp Tyr Pro Tyr Ile Ala Met Asp Thr Glu Phe Pro Gly Met Val Leu
        35                  40                  45
Arg Pro Val Gly Asn Phe Lys Ser Ser Ser Glu Ser His
    50                  55                  60

    <210> 731
    <211> 94
    <212> PRT
    <213> Eucalyptus grandis

    <400> 731
Met Arg Arg Lys Lys Lys Ala Val His Lys Thr Thr Thr Thr Asp Asp
1               5                   10                  15
Lys Arg Leu Gln Ser Thr Leu Lys Arg Ile Gly Val Asn Ala Ile Pro
            20                  25                  30
Ala Ile Glu Glu Val Asn Ile Phe Lys Asp Asp Val Val Ile Gln Phe
        35                  40                  45
Leu Asn Pro Lys Val Gln Ala Ser Ile Ala Ala Asn Thr Trp Val Val
    50                  55                  60
Ser Gly Ser Pro Gln Thr Lys Lys Leu Gln Asp Ile Leu Pro Gly Ile
65                  70                  75                  80
Ile Asn Gln Leu Gly Pro Asp Asn Leu Asp Asn Leu Gly Ser
                85                  90

    <210> 732
    <211> 103
    <212> PRT
    <213> Eucalyptus grandis

    <400> 732
Tyr Trp Glu Thr Leu Met Phe Phe Gln Ser Glu Glu Leu Leu His Asn
1               5                   10                  15
Ser Cys Val Ser Glu Val Ile Ser Arg Phe Asn Gly Pro Ser Ser Pro
            20                  25                  30
Asp Ala Ala Ala Leu Pro Val Ala Ser Lys Ser Ile Asp Leu Glu Arg
        35                  40                  45
Asn Arg Arg Lys Lys Leu Asn Glu Arg Leu Phe Ala Leu Arg Ala Leu
    50                  55                  60
Val Pro Lys Ile Ser Lys Met Asp Lys Ala Ser Ile Val Lys Asp Ala
65                  70                  75                  80
Ile Asp Tyr Ile Gln Asp Leu Arg Glu Gln Glu Gly Arg Ser Glu Pro
                85                  90                  95
Arg Ser Gln Ser Ser Asn Leu
            100

    <210> 733
    <211> 78
    <212> PRT
    <213> Eucalyptus grandis

    <400> 733
Gly Val Ala Ile Asp Val Lys Ile Met Gly Trp Asp Ala Val Val Arg
```

1   5   10   15
Val Glu Ser Gly Arg Lys Asp His Pro Ala Ala Arg Leu Met Val Ala
            20   25   30
Leu Gln Glu Leu Asn Leu Glu Leu Gln His Ala Ser Val Ser Val Val
        35   40   45
Asn Glu Leu Met Ile Gln Gln Ala Thr Val Lys Met Gly Ser Gln Leu
    50   55   60
Tyr Thr Gln Glu Gln Leu Lys Ala Ala Leu Leu Ala Val Ile
65   70   75

<210> 734
<211> 122
<212> PRT
<213> Eucalyptus grandis

<400> 734
Gly Ile Tyr Ser Cys Leu Asn Leu Asp Ala Ser Asn Gly Gly Ser Ser
1   5   10   15
Ala Ile Asp Pro Ser Ile Ser Ser Ala Ile Leu Asp Asp Phe Cys Thr
            20   25   30
Ile Lys Asp Gly Pro Phe Pro Asn Leu Ser Asp Cys Leu Val Gly Asn
        35   40   45
Phe Ser Ser Ser Gln Asp Val Gln Ser Gln Ile Thr Ser Ala Ser Leu
    50   55   60
Ala Asp Ser Gln Ala Phe Ser Arg Gln Asp Phe Pro Asp Asn Ser Gly
65   70   75   80
Gly Thr Ser Ser Ser Asn Val Asp Phe Asp Glu Ser Ser Ile Leu Lys
                85   90   95
Asn Ser Thr Trp Gln Gln Gln Val Ala Pro Pro Met Arg Thr Tyr Thr
            100   105   110
Lys Val Gln Lys Ala Gly Ser Val Gly Arg
        115   120

<210> 735
<211> 133
<212> PRT
<213> Eucalyptus grandis

<400> 735
Met Gly Ser Ser Ala Ser Ser Gln Arg Pro Asp Asn Leu Gln Asp Lys
1   5   10   15
Val Gly Pro Val Ser Val Ser Asp Glu Glu Trp Lys Lys Arg Leu Thr
            20   25   30
Pro Glu Gln Tyr Tyr Val Ala Arg Gln Lys Gly Thr Glu Arg Ala Phe
        35   40   45
Thr Gly Glu Tyr Trp Asn Thr Lys Thr Pro Gly Thr Tyr His Cys Val
    50   55   60
Cys Cys Asp Thr Pro Leu Phe Glu Ser Asn Thr Lys Phe Asp Ser Gly
65   70   75   80
Thr Gly Trp Pro Ser Tyr Tyr Gln Pro Ile Gly Asn Asn Val Lys Ser
                85   90   95
Lys Leu Asp Leu Ser Ile Ile Phe Met Pro Arg Gln Glu Val Leu Cys
            100   105   110
Ala Ala Cys Asp Ala His Leu Gly His Ile Phe Asp Asp Gly Pro Pro
        115   120   125
Pro Thr Gly Lys Arg
    130

<210> 736
<211> 163
<212> PRT

<213> Eucalyptus grandis

<400> 736

```
Met Val Asp Lys Cys Gly Glu Gly Leu Leu Val Ala Val Glu Ala Gln
 1               5                  10                  15
Lys Ala Val Pro Ala Pro Phe Leu Thr Lys Thr Tyr Gln Leu Val Asp
            20                  25                  30
Asp Pro Ser Thr Asp His Ile Val Ser Trp Gly Asp Asp Asp Ser Thr
        35                  40                  45
Phe Val Val Trp Arg Pro Pro Glu Phe Ala Arg Asp Leu Leu Pro Asn
    50                  55                  60
Tyr Phe Lys His Asn Asn Phe Ser Ser Phe Val Arg Gln Leu Asn Thr
65                  70                  75                  80
Tyr Gly Phe Arg Lys Ile Val Pro Asp Arg Trp Glu Phe Ala Asn Glu
                85                  90                  95
Phe Phe Arg Lys Gly Glu Lys His Leu Leu Cys Glu Ile His Arg Arg
            100                 105                 110
Lys Thr Ala Gln Pro Gln Leu Thr His His His Pro His Ser Ala Ser
        115                 120                 125
Pro Leu Ser Gly Pro Thr Pro Ala Phe Phe Pro Phe Pro Ser Arg Leu
    130                 135                 140
Ser Ile Ser Pro Ser Asp Ser Asp Asp Gln His Ser Ser His Trp Cys
145                 150                 155                 160
Asp Ser Pro
```

<210> 737
<211> 172
<212> PRT
<213> Eucalyptus grandis

<400> 737

```
Met Ala Leu Glu Ala Leu Ser Ser Pro Thr Ala Pro Ser Ala Pro Phe
 1               5                  10                  15
Gln Phe Met Lys Asp Ser Ser Pro Ala Ala Ala Ala Ala Ala Ala Ser
            20                  25                  30
Ser Ser Ser Ser Ala Tyr Asp Leu Pro Leu Ala Glu Pro Trp Ala Lys
        35                  40                  45
Arg Lys Arg Ser Lys Arg Pro His Asn Pro Pro Ser Glu Asp Glu Tyr
    50                  55                  60
Leu Ala Leu Cys Leu Ile Met Leu Ala Arg Gly Gly Ala Gly Arg Thr
65                  70                  75                  80
Leu Pro Pro Pro Pro Pro Pro Ala Val Ser Ser Glu Ala Ala Lys Val
                85                  90                  95
Ala Tyr Arg Cys Pro Val Cys Asp Lys Gly Phe Pro Ser Tyr Gln Ala
            100                 105                 110
Leu Gly Gly His Lys Ala Ser His Arg Lys His Ala Ser Ser Ala Ala
        115                 120                 125
Ala Ala Ala Gly Gly Asp Asp Gln Pro Thr Thr Ser Ser Thr Ser Ala
    130                 135                 140
Ala Thr Thr Ser Ser Gly Val Ser Gly Lys Val His Glu Cys Ser Ile
145                 150                 155                 160
Cys His Lys Ser Phe Pro Thr Gly Gln Ala Leu Gly
                165                 170
```

<210> 738
<211> 78
<212> PRT
<213> Eucalyptus grandis

<400> 738

Ile Ser Ser Ser Arg Trp Pro Arg Gln Glu Thr Leu Thr Leu Leu Glu
1 5 10 15
Ile Arg Ser Arg Leu Asp Pro Lys Phe Lys Glu Ala Asn Gln Lys Gly
20 25 30
Pro Leu Trp Asp Glu Val Ser Arg Ile Met Ser Glu Glu His Gly Tyr
35 40 45
Asn Arg Ser Gly Lys Lys Cys Arg Glu Lys Phe Glu Asn Leu Tyr Lys
50 55 60
Tyr Tyr Lys Thr Thr Lys Glu Gly Lys Ala Gly Arg Gln Asp
65 70 75

<210> 739
<211> 135
<212> PRT
<213> Eucalyptus grandis

<400> 739
Met Gly Pro Gln Met Asn Phe Arg Asn Leu Ala Asp Val Pro Ala Ala
1 5 10 15
Glu Arg Ser Thr Gly Gly Gln Pro Gly Ile Pro Leu Leu Ser Arg Gln
20 25 30
Ser Ser Val Tyr Ser Leu Thr Phe Asn Glu Phe Gln Asn Thr Trp Ser
35 40 45
Gly Leu Ser Lys Asp Ile Gly Ser Ile Asn Met Asp Glu Phe Leu Lys
50 55 60
Asn Ile Trp Thr Ala Glu Glu Ser Gln Leu Gln Leu Gln Asp Met Ala
65 70 75 80
Pro Ser Gly Asn Gly Gly Glu Gly Gly Gly Gln Val Gly Asn Leu Leu
85 90 95
Arg Gln Gly Ser Leu Thr Leu Ser Arg Thr Ile Ser Gln Lys Thr Val
100 105 110
Asp Glu Val Trp Arg Glu Leu Phe Lys Glu Thr Glu Asp Val Lys Glu
115 120 125
Gly Ser Arg Glu Gly Gly Asp
130 135

<210> 740
<211> 49
<212> PRT
<213> Eucalyptus grandis

<400> 740
Asp Phe Glu Arg Asn Arg Ala Glu Gly Val Asp Ser Ala Arg Phe Ala
1 5 10 15
Glu Leu Met Ile Ser Ser Gly Leu Leu Cys Asn Asp Ala Val Ile Trp
20 25 30
Val Thr Phe His Ser Ala Tyr Asp Phe Gly Tyr Leu Val Lys Ile Leu
35 40 45
Thr

<210> 741
<211> 101
<212> PRT
<213> Eucalyptus grandis

<400> 741
Met Asn Phe Ser Asp Lys Glu Val Gln Leu Ala Ser Asp His Pro Lys
1 5 10 15
Lys Pro Ala Gly Arg Lys Lys Phe Arg Glu Thr Arg His Pro Val Tyr
20 25 30

Arg Gly Val Arg Leu Arg Asp Ser Gly Lys Trp Val Cys Glu Val Arg
35 40 45
Glu Pro Lys Lys Lys Ser Arg Ile Trp Leu Gly Thr Phe Pro Thr Val
50 55 60
Glu Met Ala Ala Arg Ala His Asp Val Ala Ala Leu Ala Leu Arg Gly
65 70 75 80
Gln Ser Ala Cys Leu Asn Phe Ala Asp Ser Ala Trp Arg Leu Pro Lys
85 90 95
Pro Ala Ser Thr Asp
100

<210> 742
<211> 113
<212> PRT
<213> Eucalyptus grandis

<400> 742
Gly Met Asp Ser Arg Thr Ser Ser Arg Ile Ser Gly Val Thr Leu Gln
1 5 10 15
Glu Val Pro Pro Thr Ser Ser Gln Val Pro Glu Ile Pro Pro Ala Leu
20 25 30
Gly Ala Ser Ala Asn Asp Pro Ser Ser Ala Val Ser Glu Leu Lys Ala
35 40 45
Pro Ser Gln Gly Thr Ala Lys Val Thr Thr Asn Gln Phe Pro Asp Met
50 55 60
Gly Met Leu Ala Gly Ala Gln Glu Ser Glu Ala Val Ser Val Asn Gln
65 70 75 80
Ala Asp Thr Val Met Thr Gly Ile Ser Gln Thr Gln Asp Met Val Leu
85 90 95
Glu Asp Ile Ala Asn Ile Ser Arg Asp Asp Tyr Met Gly Ala Asp Leu
100 105 110
His

<210> 743
<211> 200
<212> PRT
<213> Eucalyptus grandis

<400> 743
Lys Ala Tyr Ala Arg Arg Gln His Ala Trp Leu Thr Gly Ala Asn Glu
1 5 10 15
Val Asp Ser Lys Thr Phe Ser Arg Ala Ile Leu Ala Lys Ser Ala Arg
20 25 30
Ile Gln Thr Val Val Cys Ile Pro Leu Leu Asp Gly Val Val Glu Phe
35 40 45
Gly Thr Thr Glu Arg Val Gln Glu Asp Ile Ser Leu Val Asn His Val
50 55 60
Lys Thr Phe Phe Val Asp His His Pro Pro His Pro Pro Lys Pro Ala
65 70 75 80
Leu Ser Glu His Ser Thr Ser Asn Pro Ala Ala Thr Ser Ser Gly His
85 90 95
His Arg Phe His Ser Pro Pro Val Pro Ser Tyr Ala Pro Ala Asp Pro
100 105 110
Pro Ala Ala Ala Asn Gln Gly Asp Glu Glu Glu Glu Asp Asp Asp Asp
115 120 125
Asp Glu Glu Glu Gly Glu Ser Asp Ser Glu Ala Glu Thr Gly Arg Gln
130 135 140
Gly Ala Ala Ala Ala Ala Gln Asn Pro His Gly Ala Gly Pro Ala Asn
145 150 155 160
Asn Ala Glu Pro Ser Glu Phe Glu Met Ser Glu Asp Ile Arg Leu Gly

                    165   170   175
Ser Pro Asp Asp Gly Ser Asn Asn Leu Asp Ser Asp Phe Pro Met Leu
                180   185   190
Thr Ile Asn Ser Thr Ala Ala Asp
            195   200

<210> 744
<211> 327
<212> PRT
<213> Eucalyptus grandis

<400> 744
Asp Gly Ser Cys Arg Glu Pro Lys Asp Gly Glu Glu Ser Glu Ala Thr
1   5   10   15
Arg Ile Leu Asn Leu Arg Leu Glu Asp Glu Gly Gln Gln Arg Met Arg
            20   25   30
Lys Arg Val Leu Asp Lys Leu His Thr Val Phe Gly Gly Ser Asp Glu
        35   40   45
Asp Asn Tyr Ala Leu Gly Leu Asp Arg Val Thr Asp Met Glu Met Phe
    50   55   60
Phe Leu Ala Ser Met Tyr Phe Leu Phe Pro Ser Gly Glu Gly Gly Pro
65   70   75   80
Gly Lys Cys Phe Ala Ser Glu Lys His Val Trp Leu Thr Asp Ala Leu
                85   90   95
Lys Ser Ser Ser Asp Tyr Cys Val Arg Ser Phe Leu Ala Lys Ser Ala
            100   105   110
Gly Ile Arg Thr Ile Val Leu Val Pro Thr Asp Val Gly Val Val Glu
        115   120   125
Leu Gly Ser Val Arg Ser Val Pro Glu Ser Ser Glu Leu Val Gln Thr
    130   135   140
Ile Arg Leu Ser Phe Ser Thr Asn Ser Phe Met Ser Val Lys Pro Ile
145   150   155   160
Ala Ala Leu Pro Met Thr Asn Glu Lys Lys Asp Glu Asn Ala Pro Phe
                165   170   175
Ser Asn Leu Ala Leu Ala Gly Lys Gly Glu Ala Ile Ser Lys Ile Phe
            180   185   190
Gly Lys Glu Leu Thr Thr Val Asn Ser Pro Gly His Tyr Arg Glu Lys
        195   200   205
Leu Ala Val Arg Lys Met Asp Ser Arg Gln Ser Trp Glu Pro His His
    210   215   220
Asn Gly Ser Lys Leu Pro Phe Ser Thr Pro Arg Asn Gly Thr Gln Asp
225   230   235   240
Thr Ser Trp Ala His His Ala His Gly Val Lys Gln Leu Ser Pro Val
                245   250   255
Glu Phe Tyr Gly Ser Gln Thr Ser Ala Ser Lys Leu Glu Glu Arg Met
            260   265   270
Asn Ser Gly Arg Asn Asp Phe Gly Leu Asn Arg Tyr Pro Thr Pro Lys
        275   280   285
Gln Val Gln Met Gln Ile Asp Phe Thr Gly Ala Thr Ser Arg Pro Ser
    290   295   300
Val Ile Thr Arg Pro Phe Thr Ala Asp Ser Glu His Ser Asp Val Glu
305   310   315   320
Ala Ser Cys Lys Glu Glu Gln
                325

<210> 745
<211> 361
<212> PRT
<213> Eucalyptus grandis

<400> 745

```
Met Met Met Met Thr Met Ala Ala Gly Gly Gly Asp His His Ala Arg
 1               5                  10                  15
Ser Thr Pro Thr Val Gln Ile Pro Pro Val Trp Asp Pro Leu Asp Asp
            20                  25                  30
Pro Ala Thr Gly Gly Cys Gly Gly Pro Tyr Ser Pro Tyr Ser Pro Tyr
        35                  40                  45
Ser Pro Tyr Ser Gly Gly Gly Asn Ala Gly Gly Ala Ala Gly Gly Gly
    50                  55                  60
Glu Cys Cys Asn Asp Leu Thr Ala Leu Arg Arg Phe Leu Pro Ser Asn
65                  70                  75                  80
His His Gln Asp Glu Glu Asp Glu Glu Asp Gly Arg Ala Pro Gly Glu
                85                  90                  95
Asp Gly Val Leu Gly Cys Asp Glu Phe Arg Met Tyr Glu Phe Lys Val
            100                 105                 110
Arg Lys Cys Ala Arg Gly Arg Ser His Asp Trp Thr Glu Cys Pro Tyr
        115                 120                 125
Ala His Pro Gly Glu Lys Ala Arg Arg Arg Asp Pro Arg Arg Phe Phe
    130                 135                 140
Tyr Ser Gly Thr Ala Cys Pro Asp Phe Arg Lys Gly Ala Cys Lys Lys
145                 150                 155                 160
Gly Asp Thr Cys Glu Phe Ala His Gly Val Phe Glu Cys Trp Leu His
                165                 170                 175
Pro Glu Arg Tyr Arg Thr Gln Ala Cys Lys Asp Gly Gln Ser Cys Arg
            180                 185                 190
Arg Arg Val Cys Phe Phe Ala His Ser Pro Asp Gln Leu Arg Val Leu
        195                 200                 205
Pro Ala His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln His Ser
    210                 215                 220
Pro Lys Ser Ala Thr Asp Ser Glu Phe Gly Ser Pro Val Arg Pro Ser
225                 230                 235                 240
Ala Ala Ala Ala Ala Ala Phe Asp Ser Tyr Phe Thr Lys Pro Trp Ser
                245                 250                 255
Ala Ser Phe Ile Ser Ser Pro Thr Ser Ile Leu Thr Thr Ser Ser Pro
            260                 265                 270
Pro Ile Ser Pro Pro Thr Asn Ser Pro Pro Met Ser Pro Asn Gln Arg
        275                 280                 285
Gly Gly Cys Cys Gly Ser Pro Gly Ser Val Ser Glu Leu Val Ala Cys
    290                 295                 300
Met Arg Asn Met Gln Ile Ala Lys Met Lys Met Ser Pro Arg Gly Gln
305                 310                 315                 320
Met Gly Gly Ser Leu Phe Gly Ser Pro Leu Arg Pro Gly Cys His Leu
                325                 330                 335
Ala Ala Pro Val Thr Pro Arg Ala Glu Ser Ser Pro Arg Tyr Gly Gln
            340                 345                 350
Leu Gly Gly Gly Gly Gly Gly Gly Leu
        355                 360
```

<210> 746
<211> 78
<212> PRT
<213> Eucalyptus grandis

<400> 746

```
Leu Ile Arg Trp Arg Lys His Arg Arg Val Arg Trp Ala Val Gly Ala
 1               5                  10                  15
Thr Arg Ala Ala Ala Ser Arg Ala Arg Ser Ser Gly Gly Val Arg Glu
            20                  25                  30
Gln Asp Arg Tyr Leu Pro Ile Ala Asn Ile Ser Arg Ile Met Lys Lys
        35                  40                  45
Ala Leu Pro Ala Asn Gly Lys Ile Ala Lys Asp Ala Lys Asp Thr Val
    50                  55                  60
```

Gln Glu Cys Val Ser Glu Phe Ile Ser Phe Ile Thr Ser Glu
65 70 75

<210> 747
<211> 278
<212> PRT
<213> Eucalyptus grandis

<400> 747
Met Ala Thr Pro Asp Glu Arg Pro Ser Ser Ser Ser Ser Ala Ala Ser
1 5 10 15
Ala Val Ala Ile Arg Gln Val Trp Ala Trp Asn Leu Asp Ala Glu Phe
20 25 30
Gly Leu Ile Arg Asp Leu Ile Asp Arg Tyr Pro Phe Val Ser Met Asp
35 40 45
Thr Glu Phe Pro Gly Leu Val Phe Arg Arg Pro Ala Gly Ala Gly Ala
50 55 60
Gly Ala Arg Pro Ser Pro Ser Asp His Tyr Arg Leu Leu Lys Ser Asn
65 70 75 80
Val Asp Ala Leu Ser Leu Ile Gln Val Gly Leu Thr Leu Ser Asp Ala
85 90 95
Arg Gly Gly Leu Pro Gly Phe Ile Trp Glu Phe Asn Phe Arg Glu Phe
100 105 110
Asp Ala Ala Arg Asp Pro His Ala Pro Asp Ser Ile Glu Leu Leu Arg
115 120 125
Arg Gln Gly Val Asp Phe Asp Arg Asn Arg Ala Glu Gly Ile Asp Ser
130 135 140
Ala Arg Phe Ala Glu Leu Val Met Ser Ser Gly Leu Val Cys Asn Asp
145 150 155 160
Ala Val Ser Trp Val Thr Phe His Ser Ala Tyr Asp Phe Gly Tyr Leu
165 170 175
Val Lys Ala Leu Thr Arg Arg Glu Leu Pro Gly Asp Leu Pro Glu Phe
180 185 190
Leu Ala Val Val Arg Val Phe Phe Gly Asp Arg Val Tyr Asp Val Lys
195 200 205
His Leu Met Arg Phe Cys His Ser Leu His Gly Gly Leu Asp Arg Val
210 215 220
Ala Ala Ala Leu Glu Leu Asp Arg Ala Val Gly Lys Cys His Gln Ala
225 230 235 240
Gly Ser Asp Ser Leu Leu Thr Trp Gln Ala Phe Arg Lys Ile Arg Asp
245 250 255
Val Tyr Phe Ala Asn Asp Asp Gly Pro Glu Lys His Ala Gly Val Leu
260 265 270
Tyr Gly Leu Glu Val Tyr
275

<210> 748
<211> 31
<212> PRT
<213> Eucalyptus grandis

<400> 748
Met Ala Thr Gly Val Glu Gly Asn Glu Gly Val Pro Ala Asn Leu Arg
1 5 10 15
Lys Gln Leu Ala Val Ala Val Arg Ser Ile Gln Trp Ser Tyr Ala
20 25 30

<210> 749
<211> 229
<212> PRT
<213> Eucalyptus grandis

<400> 749
Met Asn His Phe Phe Ser Ser Tyr Ser Asp Pro Ser Ser Cys Ser Leu
1 5 10 15
Asp Phe Ala Glu Ala Ser Ser Ser Ser Ser Pro Leu Ser Asp Gly Arg
20 25 30
Ser Ala Met Val Pro Gly Asn Phe Ser Asp Glu Glu Val Leu Leu Ala
35 40 45
Ser His Gln Pro Lys Lys Arg Ala Gly Arg Lys Lys Phe Gln Glu Thr
50 55 60
Arg His Pro Val Tyr Arg Gly Val Arg Arg Arg Ser Ser Gly Lys Trp
65 70 75 80
Val Cys Glu Val Arg Glu Pro Asn Lys Lys Ser Arg Ile Trp Leu Gly
85 90 95
Thr Phe Pro Thr Ala Glu Met Ala Ala Arg Ala His Asp Val Ala Ala
100 105 110
Leu Ala Leu Arg Gly Arg Ser Ala Cys Leu Asn Phe Ala Asp Ser Ala
115 120 125
Trp Arg Leu Pro Ala Pro Ala Ser Ala Asp Ala Lys Asp Ile Gln Gln
130 135 140
Ala Ala Ala Gln Ala Ala Glu Ala Phe Arg Pro Ala Glu Ser Glu Ala
145 150 155 160
Glu Asp Val Met Ser Gly Tyr Glu Lys Lys Ser Pro Ser Glu Glu Gly
165 170 175
Met Leu Tyr Asp Asp Glu Asp Val Phe Gly Met Pro Gly Leu Leu Thr
180 185 190
Asn Met Ala Glu Gly Met Leu Leu Pro Pro Pro Gln Cys Gly Gly Asp
195 200 205
Gly Tyr Gly Gly Glu Asp Asp Gly Asn Leu Asp Ala Tyr Val Ser Leu
210 215 220
Trp Asn Tyr Ser Met
225

<210> 750
<211> 210
<212> PRT
<213> Eucalyptus grandis

<400> 750
Met Pro Ile Arg Ile Gln Asn Leu Pro Lys Lys Asn Phe Asp Gln Gly
1 5 10 15
Ser Ser Leu Ser Met Pro His Val Gly Val Thr Tyr Pro Pro Trp Trp
20 25 30
Ser Leu Asn Glu Gln Gln Leu Pro Gln Ser Leu Pro Lys Asn Ser Gly
35 40 45
Leu Lys Ala Glu Ser Pro Pro Met Leu His His Gln Ala Lys His Leu
50 55 60
Gly Leu Gln Leu Gln Glu Gln Glu Ser Ser Ser Thr Gln Ser Ala Gly
65 70 75 80
Asn Ser Cys His Glu Val Ser Val Val Gly Gly Ala Asn Ser Gln Asp
85 90 95
Gln Ser Ile Ser Ser Glu Ser Gly Gln Asp Glu Ser Cys Gly Arg Ser
100 105 110
Phe Glu Gly Gln Thr Lys Pro Ile Phe Met Phe Asn Asn Pro Glu Ile
115 120 125
Val Phe Asn Ser Ser Leu Ala Asp Gln Asn Gln Pro Leu Ile Arg Val
130 135 140
Pro Tyr Pro Pro Val Asp Pro Tyr Tyr Gly Gly Leu Leu Thr Ala Tyr
145 150 155 160
Arg Pro Gln Ala Ile Ile Gln Ser Gln Val Gly Ser Gln Met Phe Gly
165 170 175

Met Ala Pro Gly Arg Val Pro Leu Pro Leu Asn Leu Ala Asp His Gly
180 185 190
Pro Ile Tyr Val Asn Ala Lys Gln Tyr Ser Arg Asn Ser Ser Glu Glu
195 200 205
Ala Val
210

<210> 751
<211> 93
<212> PRT
<213> Eucalyptus grandis

<400> 751
Gly Tyr Gly Phe Val Arg Phe Gly Asp Glu Thr Glu Gln Leu Arg Ala
1 5 10 15
Met Thr Glu Met Asn Gly Met Tyr Cys Ser Ser Arg Pro Met Arg Ile
20 25 30
Gly Pro Ala Ala Asn Lys Lys Pro Ile Ala Thr Gln Gln Tyr Gln Ser
35 40 45
Ala Ser Tyr Gln Asn Ser Gln Gly Asn Gln Gly Glu Asn Asp Pro Asn
50 55 60
Asn Thr Thr Ile Phe Val Gly Gly Leu Asp Pro Ser Val Ser Asp Asp
65 70 75 80
Leu Leu Arg Gln Val Phe Ser Gln Tyr Gly Glu Leu His
85 90

<210> 752
<211> 97
<212> PRT
<213> Eucalyptus grandis

<400> 752
Gly Tyr Arg Arg Ser Ala Lys Lys Cys Lys Glu Lys Phe Glu Asn Val
1 5 10 15
His Lys Tyr Tyr Lys Arg Thr Lys Glu Gly Arg Ala Gly Arg Gln Asp
20 25 30
Gly Lys Thr Tyr Lys Phe Phe Ser Glu Leu Glu Ala Leu His Asn Thr
35 40 45
Ala Ala Gly Ala Thr Val Gly Ile Ser Ser Ser Phe Lys Trp Trp Trp
50 55 60
Cys Cys Phe Trp His Cys Ser Pro Gly Arg Ser Leu Gly Thr Pro Ser
65 70 75 80
Phe Asp Arg Asp Ile Val Arg Gln Pro Arg Pro Asn Leu His Cys Pro
85 90 95
Arg

<210> 753
<211> 241
<212> PRT
<213> Eucalyptus grandis

<400> 753
Met Glu Met Glu Asp His His Gln Tyr Thr Ala Ala Asp Leu Arg His
1 5 10 15
Leu Ile Asn Ala Arg Pro Pro Pro Pro Pro Pro His Ile Gln Ser Ile
20 25 30
Ser Pro Pro Glu Leu Phe Cys Gly Gly Gly Gly His Arg Asn Pro Thr
35 40 45
Gln His Leu Glu Ser Met Met Met Gly Gly Gly Gly Leu His Asn Gly
50 55 60

Gln Arg Gln Gly His Ser His Asn His Gln His His His Gln Phe Gly
65 70 75 80
Arg Asp His Ser Ser Pro Ser Ser Val Ala Met Ala Gly Ala Ala Gly
85 90 95
Gly Leu Glu Ser Glu Asn Gly Gly Asn Gly Arg Trp Pro Arg Gln Glu
100 105 110
Thr Leu Thr Leu Leu Glu Ile Arg Ser Arg Leu Asp Ser Arg Phe Lys
115 120 125
Glu Ala Asn Gln Lys Gly Pro Leu Trp Asp Glu Val Ser Arg Ile Met
130 135 140
Ser Glu Glu His Gly Tyr Gln Arg Ser Gly Lys Lys Cys Arg Glu Lys
145 150 155 160
Phe Glu Asn Leu Tyr Lys Tyr Tyr Lys Lys Thr Lys Glu Gly Lys Ala
165 170 175
Gly Arg Gln Asp Gly Lys His Tyr Arg Phe Phe Arg Gln Leu Glu Ala
180 185 190
Leu Tyr Gly Glu Asn Ala Asn Ser Asn Ser Ile Leu Gln Ala Pro Ser
195 200 205
Leu Pro His Ser Leu His Phe His Pro Pro Pro Asn Ile Asn Asp Ile
210 215 220
Asn Gln Asp Ala Ser His His Arg His Pro His Gln Leu Gln Arg Pro
225 230 235 240
Cys

<210> 754
<211> 104
<212> PRT
<213> Eucalyptus grandis

<400> 754
Met Glu Arg Gly Asp Pro Asn Val Val Ala Val Ala Arg Leu Arg Arg
1 5 10 15
Glu Asp Cys Glu Arg Thr Lys His Asp Ser Ala Phe Ala Thr Trp Lys
20 25 30
Val Leu Val Gly Pro Thr Asp Trp Glu Asp Tyr Ser Leu Gly Lys Glu
35 40 45
Gly Ala Ala Arg Tyr Arg Val His Asn Leu Pro Lys Ser Pro Gly Pro
50 55 60
Gly Ile Tyr Glu Leu Gly Val Ala Ala Ser His Ala Lys Leu Gly Arg
65 70 75 80
Glu Ile Ala Lys Leu Asp Pro Arg Tyr Ile Val Val Val Tyr Leu Gly
85 90 95
Lys Ala Asp Cys Val Arg Thr Arg
100

<210> 755
<211> 229
<212> PRT
<213> Eucalyptus grandis

<400> 755
Met Gly Tyr Ala Gln Leu Val Ile Gly Pro Ala Gly Ser Gly Lys Ser
1 5 10 15
Thr Tyr Cys Ser Ser Leu Tyr Gln His Cys Glu Ala Ile Gly Arg Thr
20 25 30
Ile His Ile Val Asn Leu Asp Pro Ala Ala Glu Asn Phe Asp Tyr Pro
35 40 45
Val Ala Met Asp Ile Arg Glu Leu Ile Ser Leu Asp Asp Val Met Glu
50 55 60
Glu Leu Gly Leu Gly Pro Asn Gly Gly Leu Met Tyr Cys Met Glu His

```
65                  70                  75                  80
Leu Glu Glu Asn Leu Asp Asp Trp Leu Thr Glu Glu Leu Asp Asn Tyr
                85                  90                  95
Leu Asp Asp Asp Tyr Leu Val Phe Asp Cys Pro Gly Gln Ile Glu Leu
            100                 105                 110
Phe Ser His Val Pro Val Leu Arg Asn Phe Val Glu His Leu Gln Arg
        115                 120                 125
Lys Asn Phe Asn Val Cys Gly Val Tyr Leu Leu Asp Ser Gln Phe Ile
    130                 135                 140
Thr Asp Val Thr Lys Phe Ile Ser Gly Cys Met Ala Ser Leu Ser Ala
145                 150                 155                 160
Met Val Gln Leu Glu Leu Pro His Val Asn Ile Leu Ser Lys Met Asp
                165                 170                 175
Leu Val Lys Asn Lys Arg Asp Ile Asp Asp Tyr Leu Asn Pro Glu Pro
            180                 185                 190
Arg Val Leu Leu Ser Glu Leu Asn Gln Thr Met Ala Pro Lys Phe Glu
        195                 200                 205
Lys Leu Asn Lys Ala Leu Ala Glu Leu Val Asp Glu Tyr Ser Met Val
    210                 215                 220
Ser Phe Ile Pro Leu
225
```

<210> 756
<211> 81
<212> PRT
<213> Eucalyptus grandis

<400> 756

```
Tyr Pro Thr Ile Ile Tyr Arg Pro Tyr Ser Phe Met Ala Lys Ile Ser
 1               5                  10                  15
Ala Val Glu Arg Gly His Phe Leu Thr Val Ile Pro His Phe Ala Trp
            20                  25                  30
Arg Leu Val Asn Pro Ala Thr Leu Lys Tyr Phe Asp Ala Pro His Arg
        35                  40                  45
Pro Met Tyr Met Gln Glu Tyr Leu Tyr Ser Ile Arg Asn His Arg Tyr
    50                  55                  60
Thr Ala Thr Met Leu Gln His Ile Ala Glu Asp Arg Asp Gly Thr Ser
65                  70                  75                  80
His
```

<210> 757
<211> 115
<212> PRT
<213> Eucalyptus grandis

<400> 757

```
Met Pro Lys Gly Ser Ser Ile Lys Met Gly Val Pro Leu Gln His Ser
 1               5                  10                  15
Ser Gly Ile Lys Gln Leu Asn Val His Phe Gln Glu Arg Asp Leu Cys
            20                  25                  30
Ser Thr Gln Ser Thr Ser Gln Ser Phe Ser Glu Val Pro Asn Ile Gly
        35                  40                  45
Gly Ser Thr Asp Cys Ser Gln Ala Thr Val Leu Glu Gln Thr Glu His
    50                  55                  60
Gly Glu Thr Glu Gly Gln Ser Val Arg Gly Gln Ala Lys Ser Ala Leu
65                  70                  75                  80
Ser Met Gly Thr Gln Asp Leu Val Phe Gln Pro Leu Glu Val Cys Ile
                85                  90                  95
Pro Leu His Tyr Ala Glu Pro Ser Leu Gly Gly Phe Met Pro Ala Ala
            100                 105                 110
```

Tyr Gly Pro
115

<210> 758
<211> 356
<212> PRT
<213> Eucalyptus grandis

<400> 758
Met Lys Glu Arg Gln Arg Trp Arg Ala Glu Glu Asp Ala Leu Leu Arg
1 5 10 15
Ala Tyr Val Lys Gln Tyr Gly Pro Arg Glu Trp His Leu Val Ser Gln
20 25 30
Arg Met Asn Thr Pro Leu Asn Arg Asp Ala Lys Ser Cys Leu Glu Arg
35 40 45
Trp Lys Asn Tyr Leu Lys Pro Gly Ile Lys Lys Gly Ser Leu Ser Glu
50 55 60
Glu Glu Gln Arg Leu Val Ile Gln Leu Gln Ala Lys His Gly Asn Lys
65 70 75 80
Trp Lys Lys Ile Ala Ala Glu Ile Pro Gly Arg Thr Ala Lys Arg Leu
85 90 95
Gly Lys Trp Trp Glu Val Phe Lys Glu Lys Gln Gln Arg Glu Gln Lys
100 105 110
Glu Asn Lys Gly Ala Leu Pro Ile Asp Glu Gly Lys Tyr Asp His Ile
115 120 125
Leu Glu Asn Phe Ala Glu Lys Leu Val Lys Glu Arg Ser Thr Pro Ala
130 135 140
Leu Leu Met Ala Thr Ala Asn Gly Gly Phe Ile His Thr Asp Ser Pro
145 150 155 160
Ala Leu Ala Pro Thr Leu Leu Pro Pro Trp Leu Ser Asn Ser Asn Gly
165 170 175
Thr Pro Thr Leu Arg Pro Pro Ser Pro Ser Val Thr Leu Ser Leu Ser
180 185 190
Pro Ala Thr Val Pro Ala Ser Gln Pro Ile Pro Trp Leu Gln Ala Asp
195 200 205
Arg Gly Leu Asp Ser Gly Ser Leu Ser Leu Thr Gly Leu Pro Asn His
210 215 220
Gly Pro Leu Pro Thr Ser Gly Glu Asn Ile Leu Met Ser Glu Leu Ala
225 230 235 240
Glu Cys Cys Lys Glu Leu Glu Glu Gly His Arg Ala Trp Ala Ala His
245 250 255
Lys Lys Glu Ala Ala Trp Arg Leu Lys Arg Leu Glu Leu Gln Leu Glu
260 265 270
Ser Glu Lys Ala Cys Arg Arg Arg Glu Lys Met Glu Glu Ile Glu Ala
275 280 285
Lys Ile Asn Thr Leu Arg Glu Glu Gln Lys Ala Ser Leu Asp Lys Ile
290 295 300
Glu Thr Glu Tyr Arg Glu Gln Leu Ala Gly Leu Arg Lys Asp Ala Glu
305 310 315 320
Ser Lys Glu Gln Lys Leu Ala Glu Gln Trp Thr Ala Lys His Val Gln
325 330 335
Leu Ser Lys Leu Ile Glu Gln Ile Gly Phe Arg Pro Arg Ile Ala Asp
340 345 350
His Asp Arg Gln
355

<210> 759
<211> 93
<212> PRT
<213> Eucalyptus grandis

<400> 759
Gly Leu Asp Ser Cys Ser Val Glu Glu Leu Gln Gln Thr Glu Asn Gln
1   5   10   15
Leu Glu Arg Ser Leu Thr Lys Ile Arg Ala Arg Lys Asn His Leu Ile
            20   25   30
Arg Glu His Ile Glu Arg Leu Lys Ala Glu Glu Arg Lys Leu Leu Glu
        35   40   45
Glu Lys Arg Lys Leu Leu Gln Glu Ile Glu Cys Gly Lys Gly Leu Thr
    50   55   60
Pro Val Ser Ser Glu Pro Pro Arg Glu Glu Ile Arg Ala Glu Ser Met
65   70   75   80
Asp Val Glu Thr Glu Leu Phe Ile Gly Pro Pro Lys Arg
                85   90

<210> 760
<211> 70
<212> PRT
<213> Eucalyptus grandis

<400> 760
Glu Asp Pro Val Gly Arg Pro Glu Ser Ala Ser Glu Ile Ser Gln Glu
1   5   10   15
Pro Gly Gln Glu Phe Met Asp Glu Asp Glu Leu Leu Asn Met Pro Lys
            20   25   30
Leu Leu Asp Asp Met Ala Glu Gly Met Leu Val Ser Pro Pro Arg Thr
        35   40   45
Gln Met Ala Ser Glu Asn Asp Ser Pro Glu Asp Ser Asp Gly Gly Glu
    50   55   60
Ser Leu Trp Ser Tyr Pro
65   70

<210> 761
<211> 243
<212> PRT
<213> Eucalyptus grandis

<400> 761
Met Cys Gly Gly Ala Ile Ile Ser Asp Phe Val Glu Glu Arg Leu Asp
1   5   10   15
Arg Arg Arg Pro Gly Ser Cys Arg Pro Glu Arg Lys Leu Thr Pro His
            20   25   30
Glu Leu Trp Ser Glu Leu Asp Pro Ala Ser Asp Leu Leu Ser Leu Asp
        35   40   45
Gly Pro Val Ala Gln Gly His Pro Asn Pro Phe Ser Leu Val Ala Asn
    50   55   60
Gln Leu Asn Gln Val Met Lys Ser Glu Glu Lys Asn Ser Glu Glu Ala
65   70   75   80
Gly His Gly His Val Ser Glu Thr Gln Lys Ser Gln Ser Asn Gly Arg
                85   90   95
Ser Gln Arg Ala Arg Lys Asn Val Tyr Arg Gly Ile Arg Gln Arg Pro
            100   105   110
Trp Gly Lys Trp Ala Ala Glu Ile Arg Asp Pro His Lys Gly Val Arg
        115   120   125
Val Trp Leu Gly Thr Phe Lys Thr Ala Glu Glu Ala Ala Arg Ala Tyr
    130   135   140
Asp Glu Ala Ala Lys Arg Ile Arg Gly Asp Lys Ala Lys Leu Asn Phe
145   150   155   160
Ser Gly Pro Pro Ala Pro Ala Gln Pro Ser Ala Lys Lys Arg Cys Val
                165   170   175
Ala Pro Asp Glu Pro Lys Asp Glu Ala Gly Ala Ala Gly Cys Glu Leu
            180   185   190

Lys Glu Arg Ile Ala Ser Leu Glu Ser Phe Leu Glu Leu Glu Pro Thr
        195   200   205
Glu Glu Pro Leu Glu Pro Gly Thr Gly Pro Ser Pro Ala Asp Leu Trp
    210   215   220
Met Leu Glu Asp Leu Val Thr His His Gln His Arg Phe Asp Asn Gln
225   230   235   240
Leu Val Tyr

<210> 762
<211> 125
<212> PRT
<213> Eucalyptus grandis

<400> 762
Gln Gln Arg Leu Leu Gln Tyr Trp Ser Asp Ala Leu Asn Leu Ser Pro
1   5   10   15
Arg Gly Arg Met Met Met Met Asn Arg Leu Gly Pro Asp Gly Arg Pro
            20   25   30
Ile Phe Arg Pro Pro Gln Pro Ile Asn Thr Thr Lys Leu Tyr Arg Gly
        35   40   45
Val Arg Gln Arg His Trp Gly Lys Trp Val Ala Glu Ile Arg Leu Pro
    50   55   60
Arg Asn Arg Thr Arg Leu Trp Leu Gly Thr Phe Asp Thr Ala Glu Asp
65   70   75   80
Ala Ala Leu Ala Tyr Asp Arg Glu Ala Phe Lys Leu Arg Gly Glu Asn
                85   90   95
Ala Arg Leu Asn Phe Pro Glu Leu Phe Leu Asn Lys Asp Lys Ala Glu
            100   105   110
Glu Ser Ala Gly Pro Ser Ser Ser Ser Ser Ser Pro Pro
        115   120   125

<210> 763
<211> 141
<212> PRT
<213> Eucalyptus grandis

<400> 763
Ser Ile Pro Ser Val Gly Leu Leu Val Gln Tyr Lys Leu Leu Asn Pro
1   5   10   15
Ala Ser Ser Tyr Ser Ser Cys Ile Met Ile Gln Asp Met Ser Gln Gly
            20   25   30
Phe Arg Lys Ile Asp Thr Asp Arg Trp Glu Phe Ala Asn Arg Gly Phe
        35   40   45
Gln Glu Gly Lys Lys His Leu Leu Lys Asn Ile Arg Arg Arg Arg Lys
    50   55   60
Leu Ser Asp His Arg Thr Thr Ser Ser Ser Thr Val Ala Ser Asp Tyr
65   70   75   80
Pro Glu Ala Gly Lys Glu Ala Glu Leu Glu Met Leu Lys Arg Asp Gln
                85   90   95
Glu Ala Leu Lys Ala Glu Ile Leu Lys Leu Arg Glu Glu Arg Glu Asn
            100   105   110
Ser Gln His Glu Ile Asn Gln Val Ile Glu Arg Phe Arg Tyr Ala Glu
        115   120   125
Cys Arg Cys Arg Arg Met Phe Leu Phe Leu Ser Lys Ala
    130   135   140

<210> 764
<211> 202
<212> PRT
<213> Eucalyptus grandis

<400> 764
Lys His Leu Leu Asn Asn Ile Tyr Arg Arg Lys Pro Ile His Ser His
1 5 10 15
Ser Gly Gln Gly Ala Arg Leu Ser Asp Ser Glu Lys Gln Met Tyr Glu
20 25 30
Glu Glu Ile Lys Arg Leu Arg His Glu Lys Ser Ser Leu Gln Leu Glu
35 40 45
Leu Gln Arg Tyr Gln Gly Asp Asn Gln Asp Val Asp Phe Gln Ile Gln
50 55 60
Leu Leu Arg Lys Gln Phe Gln Asn Met Glu Gln Lys Gln Thr His Leu
65 70 75 80
Ile Thr Val Leu Ala Gln Leu Met Gln Lys Pro Val Phe Ala Ser Leu
85 90 95
Phe Thr Gln Gln Ser Asp Ser Pro Thr Lys Lys Arg Arg Leu Ala Glu
100 105 110
Leu Asp His Leu His Asp Ser Asp Asp Lys Ser Gly Leu Glu Ser Leu
115 120 125
Lys Phe Gln Lys Glu Lys Phe Asn Gly Val Pro Phe Ser Leu Leu Asp
130 135 140
Leu Asp Ser Val Glu Lys Leu Glu Gln Ser Leu His Phe Leu Glu Asn
145 150 155 160
Leu Leu Gln Gly Val Asp Asn Thr Ser Gly Ala Glu Gln His Asp Phe
165 170 175
Gly Ala Ile Ser Leu Pro Trp Pro Ala Gly Phe Thr Glu Arg Lys Glu
180 185 190
Ser Leu Asp Asp Ser Asp Arg His Ile His
195 200

<210> 765
<211> 175
<212> PRT
<213> Eucalyptus grandis

<400> 765
Met Gln Pro Lys Ser Lys Ile Ser Asn Gly Val Asp Ala His Pro His
1 5 10 15
Ser Ile Gln Thr Ser Ala Val Phe Thr Glu Pro Trp Trp Arg Gly Tyr
20 25 30
Asn Thr Ile Ser Pro Ala Asp Pro Gly Arg Asn Glu Thr His Ala Pro
35 40 45
Leu Gly Cys Ile Asn Gly Gly Ser Glu Ser Asn Gly Gly Gln Ser Gln
50 55 60
Ser Asn Glu Glu Arg Val Glu Glu Asp Asp Asp Asp Asp Asn Val Lys
65 70 75 80
Gly Ser Gly Asn Pro Ala Cys Ser Gly Ala Val Gly Asn Gln Gly Gln
85 90 95
Gly Pro Gln Asn Gly His Gly Ala Pro Thr Ile Ile Thr Met Arg Asp
100 105 110
Asp Gly Leu Ala Gln Pro Pro Gln Leu Glu Leu Val Gly His Thr Ile
115 120 125
Ala Cys Ala Ser Asn Pro Tyr Gln Asp Pro Tyr Tyr Gly Gly Leu Met
130 135 140
Ala Gln Tyr Gly His Gln Ser Met Ala Tyr Pro Phe Val Gly Ile Pro
145 150 155 160
His Ala Arg Met Pro Leu Pro Leu Asp Leu Ala Gln Glu Pro Cys
165 170 175

<210> 766
<211> 190
<212> PRT

<213> Eucalyptus grandis

<400> 766

```
Thr Gly Ala Asn Glu Lys Asp Ser Val Met Glu Ile Thr Phe His Val
 1               5                  10                  15
Pro Asn Ser Asn Thr Gln Phe Val Gly Asp Glu Asn Arg Pro Pro Ala
            20                  25                  30
Gln Val Phe Arg Asp Arg Ile Met Ser Val Ala Asp Val Gly Ala Gly
        35                  40                  45
Gly Glu Asp Ala Val Val Thr Phe Glu Gly Ile Ala Ile Leu Thr Pro
    50                  55                  60
Arg Gly Arg Tyr Ser Val Glu Leu His Leu Ser Phe Leu Arg Leu Gln
65                  70                  75                  80
Gly Gln Ala Asn Asp Phe Lys Ile Gln Tyr Ser Ser Val Val Arg Leu
                85                  90                  95
Phe Leu Leu Pro Lys Ser Asn Gln Pro His Thr Phe Val Ile Ile Thr
            100                 105                 110
Leu Asp Pro Pro Ile Arg Lys Gly Gln Thr Leu Tyr Pro His Ile Val
        115                 120                 125
Met Gln Phe Glu Thr Asp Tyr Val Val Gln Ser Thr Leu Ser Met Asn
    130                 135                 140
Asp Asp Leu Phe Asn Thr Lys Tyr Lys Asp Lys Leu Glu Pro Ser Tyr
145                 150                 155                 160
Lys Gly Leu Ile His Glu Val Phe Thr Thr Ile Leu Arg Gly Leu Ser
                165                 170                 175
Gly Ala Lys Val Thr Lys Pro Gly Lys Phe Arg Ser Ser Gln
            180                 185                 190
```

<210> 767
<211> 251
<212> PRT
<213> Eucalyptus grandis

<400> 767

```
Leu Glu Thr Ser Gly Asn Arg Leu Ala Arg Ala Ile Ser Asp Ala Asp
 1               5                  10                  15
Thr Ser Ser Ala Ala Ala Leu Met Asp Met Leu Glu Gln Met Val Ser
            20                  25                  30
Val Met Gly Asp Pro Ile Gln Arg Leu Gly Ala Tyr Leu Leu Glu Gly
        35                  40                  45
Leu Arg Ala Lys Leu Lys Phe Ser Gly Ser Ile Ile Tyr Arg Lys Leu
    50                  55                  60
Lys Cys Glu Glu Pro Thr Ser Ser Glu Leu Leu Thr Asn Met Gln Val
65                  70                  75                  80
Leu Tyr Gln Ile Cys Pro Tyr Trp Lys Phe Ala Tyr Val Ser Thr Asn
                85                  90                  95
Val Ile Ile Thr Lys Ala Met Glu Asn Glu Gln Arg Ile His Ile Val
            100                 105                 110
Asp Phe Gln Ile Thr Gln Gly Ser Gln Trp Val Thr Phe Ile Gln Ala
        115                 120                 125
Leu Ala Gln Arg Pro Gly Gly Pro Pro Leu Leu Arg Ile Thr Gly Ile
    130                 135                 140
Asp Asp Ser Asp Ser Val His Ala Arg Gly Ala Gly Leu Glu Ile Val
145                 150                 155                 160
Gly Gln Lys Leu Ser Glu Ile Ala Glu Ser Cys Asn Val Pro Phe Glu
                165                 170                 175
Phe His Asp Ala Ala Val Ser Leu Ser Glu Val Glu Leu Gln Asn Leu
            180                 185                 190
Met Ile Arg Pro Gly Asp Ala Leu Ala Val Asn Cys Pro Tyr Ile Leu
        195                 200                 205
His His Ile Pro Asp Glu Ser Val Ser Thr Gln Asn His Arg Asp Arg
```

```
    210                 215                 220
Val Leu Arg Leu Ile Lys Ser Leu Ser Pro Arg Val Val Thr Leu Val
225                 230                 235                 240
Glu Gln Glu Ser Asn Thr Asn Thr Ser Ser Phe
                245                 250
```

<210> 768
<211> 174
<212> PRT
<213> Eucalyptus grandis

<400> 768

```
Gly Asn Trp Asp Glu Pro Thr Lys Glu Glu Val Asn Glu Pro Ala Asp
 1               5                  10                  15
Ile Ala Glu Ala Lys Thr Val Ser Asp Ser Glu Glu Ala Lys Pro Asn
            20                  25                  30
Ala Lys Arg Lys Gln Pro Glu Lys Glu Ala Ser Glu Lys Glu Ala Ser
        35                  40                  45
Lys Lys Glu Pro Asn Lys Pro Pro Asn Ser Trp Phe Asp Leu Lys Val
    50                  55                  60
Asn Thr His Val Tyr Val Thr Gly Leu Pro Glu Asp Val Thr Met Glu
65                  70                  75                  80
Glu Val Val Glu Val Phe Ser Lys Cys Gly Ile Leu Lys Glu Asp Pro
                85                  90                  95
Glu Thr Lys Lys Pro Arg Val Lys Ile Tyr Val Asp Lys Glu Thr Gly
            100                 105                 110
Arg Lys Lys Gly Asp Ala Leu Val Thr Tyr Leu Lys Glu Pro Ser Val
        115                 120                 125
Ala Leu Ala Ile Gln Ile Leu Asp Gly Ala Pro Phe Arg Pro Gly Gly
    130                 135                 140
Lys Val Pro Met Ser Val Ser Gln Ala Lys Phe Glu Gln Lys Gly Asp
145                 150                 155                 160
Lys Phe Ile Ser Lys Gln Val Asp Gly Lys Lys Lys Arg Asn
                165                 170
```

<210> 769
<211> 218
<212> PRT
<213> Eucalyptus grandis

<400> 769

```
Thr Phe Glu Gln Leu Leu Leu Pro Phe Leu Tyr Glu Leu Gln Ile Leu
 1               5                  10                  15
Ile Asp Leu Ser Asn Asp Lys Ala Thr Val Leu Thr Asp Lys Ile Gln
            20                  25                  30
Val Leu Lys Asp Leu Thr Thr Glu Val Asn Lys Leu Lys Ala Glu Cys
        35                  40                  45
Ala Ala Leu Ile Glu Glu Ser Arg Glu Glu Lys Asn Glu Leu Arg Glu
    50                  55                  60
Glu Lys Ser Ser Leu Lys Ser Glu Val Glu Asn Leu Asn Val Gln Tyr
65                  70                  75                  80
Gln Gln Arg Thr Arg Val Met Tyr Pro Trp Ala Ala Met Asp Pro Ser
                85                  90                  95
Val Val Met Gly Pro Ala Tyr Ser Tyr Pro Gly Pro Ile Pro Val Thr
            100                 105                 110
Pro Gly Pro Ile Pro Met Leu Ser Gln Leu Gln Pro Phe Pro Phe Phe
        115                 120                 125
Gly Asn Gln Asn Ala Ser Ala Ile Pro Ala Pro Cys Ser Thr Phe Ile
    130                 135                 140
Pro Asn Ser Met Pro Ala Asn Pro Thr Phe Glu Gln Gln Ser Thr Gln
145                 150                 155                 160
```

Tyr Ala Ser Thr Ser His Val Ser Asn Lys Lys Asp Ser Lys Ser Arg
165 170 175
Ser Ser Asp His Gln Arg Gly Ser Ile Ala Glu Gln Asp Glu Asp Ser
180 185 190
Asn Asn Val Ala Thr Asp Leu Glu Leu Lys Met Pro Gly Thr Ser Ser
195 200 205
His Gln Asp Leu Thr Ser Gly Glu Lys Lys
210 215

<210> 770
<211> 188
<212> PRT
<213> Eucalyptus grandis

<400> 770
His Pro Met Lys Pro Glu Ser Val Glu Val Leu Asn Phe Gly Asp Ser
1 5 10 15
Gly Ser Gly Arg Leu Leu Ser Ser His Ser Gln Val Ala Val Ala Glu
20 25 30
Glu Pro Leu Asn His Val Glu Ala Glu Arg Gln Arg Arg Glu Lys Leu
35 40 45
Asn Gln Arg Phe Tyr Ala Leu Arg Ala Val Val Pro Asn Val Ser Lys
50 55 60
Met Asp Lys Ala Ser Leu Leu Gln Asp Ala Glu Ser Tyr Ile Arg Glu
65 70 75 80
Leu Asn Met Asn Leu Gln Ala Ala Glu Ser Asp Lys Glu Asp Leu Lys
85 90 95
Lys Gln Leu Asp Glu Leu Lys Lys Arg Ser Ser Asp Lys Glu Cys Ile
100 105 110
Pro Val Asp Gln Asp Arg Lys Met Ala Lys Pro Thr Gly Ser Arg Ser
115 120 125
Thr Gly Val Ala Ile Asp Val Lys Ile Met Gly Trp Asp Ala Val Val
130 135 140
Arg Val Glu Ser Gly Arg Lys Asp His Pro Ala Ala Arg Leu Met Val
145 150 155 160
Ala Leu Gln Glu Leu Asn Leu Glu Leu Gln His Ala Ser Val Ser Val
165 170 175
Val Asn Glu Leu Met Ile Gln Gln Ala Thr Val Lys
180 185

<210> 771
<211> 157
<212> PRT
<213> Eucalyptus grandis

<400> 771
Met Met Leu Gly Glu Pro His Arg Pro Pro Asn Pro Thr Ile Asp Val
1 5 10 15
Pro Pro Trp Pro Ile Leu Asp Asp Pro Thr Asp Asp Ala Val Pro His
20 25 30
Ser Pro Tyr Ser Pro Tyr Thr Leu Asn Ala Gly Tyr Gly Gly Gly Cys
35 40 45
Asp Ser Ser Pro Ser Ala Ala Gly Pro Gly His Phe Gln Asp Val Met
50 55 60
Ala Ala Leu Arg Arg Phe Leu Pro Ser Asn Arg Pro Asp Thr Asp Pro
65 70 75 80
Asp Pro Asp Met Thr Ser Ser Arg Glu Ala Asp Phe Pro Met Asp Val
85 90 95
Tyr Ser Cys Asp Asn Phe Arg Met Tyr Glu Phe Lys Val Arg Arg Cys
100 105 110
Ala Arg Gly Arg Ser His Asp Trp Thr Glu Cys Pro Tyr Ala His Pro

115 120 125
Gly Glu Lys Ala Arg Arg Arg Asp Pro Arg Lys Tyr His Tyr Ser Gly
130 135 140
Thr Ala Cys Pro Glu Phe Arg Lys Gly Ser Cys Arg Lys
145 150 155

<210> 772
<211> 129
<212> PRT
<213> Eucalyptus grandis

<400> 772
Asp Glu Pro Ser Thr Ser Ala Thr Asn Ser Gly Gly Gly Ala Ala Ala
1 5 10 15
Ala Ser Ser Ser Gly Gly Gly Arg Ser His Glu Cys Ser Ile Cys His
20 25 30
Lys Ser Phe Pro Thr Gly Gln Ala Leu Gly Gly His Lys Arg Cys His
35 40 45
Tyr Asp Gly Gly Ala Ser Gly Ser Ala Asn Ser Gly Val Thr Thr Ser
50 55 60
Glu Gly Val Gly Ser Ala Ala Pro Pro Ala Leu Gly Tyr Asp Ser Gly
65 70 75 80
Arg Arg Asn Phe Asp Leu Asn Val Pro Ala Leu Pro Glu Phe Pro Thr
85 90 95
Gly Phe Ile Val Ser Gly Asp Asp Glu Val Glu Ser Pro His Pro Ser
100 105 110
Lys Lys Pro Arg Phe Ser Thr Pro Leu Lys Ile Lys Leu Ser Pro Glu
115 120 125
Gln

<210> 773
<211> 149
<212> PRT
<213> Eucalyptus grandis

<400> 773
Met Ala Phe Glu Gln Tyr Phe Ala Gln Glu Trp Arg Pro Ile Pro Gly
1 5 10 15
Pro Ala Met Asp Ser Gly Ser Ser Asp Gly Cys Phe Asp Cys Asn Ile
20 25 30
Cys Leu Asp Phe Ala Ile Glu Pro Val Val Thr Leu Cys Gly His Leu
35 40 45
Tyr Cys Trp Pro Cys Ile Tyr Lys Trp Leu His Val Gln Ser Ala Ser
50 55 60
Leu Ala Ser Asp Glu His Pro Gln Cys Pro Val Cys Lys Ala Glu Ile
65 70 75 80
Ser His Thr Ala Met Val Pro Leu Tyr Gly Arg Gly Gln Ser Ser Lys
85 90 95
Glu Ser Asp Leu Gln Asp Lys Ala Leu Gln Leu Gly Thr Ile Val Pro
100 105 110
Pro Arg Pro Ala Ala Cys Gly Ile Gln Ala Leu Ala Ser Thr Thr Pro
115 120 125
Arg Ser Gly Gln Gln Leu Pro Tyr Arg Asn Pro Tyr Gln Asn Pro Tyr
130 135 140
Tyr Ser Ala Asn Ser
145

<210> 774
<211> 175
<212> PRT

<213> Eucalyptus grandis

<400> 774
Met Val Lys Arg Asp Arg Glu Asp Thr Glu Val Glu Ala Leu Ala Arg
1 5 10 15
Ala Asn Cys Leu Met Leu Leu Ser Arg Val Gly Glu Ser Thr Asp Ser
20 25 30
Ala Ser Pro Asp Arg Lys Ser Arg Pro Thr Glu Arg Met Phe Ala Cys
35 40 45
Lys Thr Cys Asn Arg Glu Phe Ser Ser Phe Gln Ala Leu Gly Gly His
50 55 60
Lys Ala Ser His Lys Lys Pro Lys Leu Ile Ser Gly Asp Leu Phe His
65 70 75 80
Leu Gly His Ala Ala Asp Ser Ser Pro Ala Lys Pro Lys Thr His Glu
85 90 95
Cys Ser Ile Cys Gly Leu Asp Phe Pro Met Gly Gln Ala Leu Gly Gly
100 105 110
His Met Arg Arg His Arg Ala Ala Met Leu Glu Ser Leu Ala Ala Ala
115 120 125
Ala Ala Lys Pro Val Pro Val Leu Lys Lys Ser Asn Ser Lys Arg Val
130 135 140
Thr Gly Leu Asp Leu Asn Ser Leu Pro Met Glu Asp Asp Leu Thr Leu
145 150 155 160
Arg Leu Gly Lys Val Ala Pro Pro Leu Val Leu Asp Leu Val Leu
165 170 175

<210> 775
<211> 154
<212> PRT
<213> Eucalyptus grandis

<400> 775
Pro Asp Ala Ala Gly Glu Arg Leu Gly His Gly Asp Gln Glu Glu Pro
1 5 10 15
Leu Gly Val Gly Gly Val Gly Leu Pro Gly Arg Ala Tyr Phe Ser Ser
20 25 30
Asn Pro Ala Trp Val Thr Gly Ala Glu Arg Leu Gly Asn Cys Gly Cys
35 40 45
Asp Arg Ala Arg Gln Ala Gln Ile Phe Gly Leu Gln Thr Ile Ala Cys
50 55 60
Val Pro Val Leu Asn Gly Val Val Glu Leu Gly Ser Thr Glu Pro Ile
65 70 75 80
Tyr Gln Ser Ser Asp Leu Ile Ser Gly Ile Arg Gly Leu Phe Asn Phe
85 90 95
His Glu Ser Glu Met Gly Cys Gly Gly Arg Val Leu Asn Ser Glu His
100 105 110
Asp Pro Ala Ser Leu Trp Ile Cys Asp Pro Pro Val Thr Met Glu Ile
115 120 125
Asn Asp Arg Pro Met Thr Phe Gln Ile Glu Asn Pro Ser Ser Ser Ser
130 135 140
Leu Thr Glu Ser Pro Ser Ala Ile Cys Ala
145 150

<210> 776
<211> 177
<212> PRT
<213> Eucalyptus grandis

<400> 776
Leu Gly Thr Gln Ile Pro Ser Gly Ile His Met Pro Ser Ala Asn Leu
1 5 10 15

Ser Ser Ile Ser Ile Leu Gly Pro Ile Pro Met Val Ser Gly Asp Gly
20 25 30
Gly Gly Arg Thr Gly Ser Glu Arg Ser Arg Asn Ala Asp Cys Ala Pro
35 40 45
Ala Gly Phe Pro Gly Gly Asp Glu Asp Val Asn Lys Gly Gly Asp Ile
50 55 60
Pro Tyr Gly Met Ser Thr Ile Val Arg Val Ile Pro Asn Ser Arg Tyr
65 70 75 80
Leu Arg Val Ala Gln Gln Leu Leu Asp Glu Ile Val Asn Val Arg Lys
85 90 95
Ala Leu Lys Arg Pro Asp Asp Ala Asn Asp Gln Ser Arg His Glu Asn
100 105 110
Gln Arg Ser Pro Lys Asp Ala Asp Gly Gly Ser Lys Asn Glu Ala Ser
115 120 125
Ser Asn Pro Gln Glu Ser Ala Ser Asn Ser Ser Glu Leu Ser Ala Ala
130 135 140
Glu Lys Gln Asp Leu Gln Asn Lys Leu Thr Lys Leu Leu Ser Met Leu
145 150 155 160
Asp Glu Val Asp Lys Arg Tyr Lys Gln Tyr Tyr His Gln Met Gln Ile
165 170 175
Val

<210> 777
<211> 59
<212> PRT
<213> Eucalyptus grandis

<400> 777
Gly Asn Glu Val Ser Ser Asp Tyr Gly Trp Lys Phe Leu Phe Ala Gly
1 5 10 15
Leu Gln Arg Cys Gly Lys Ser Cys Arg Leu Arg Trp Leu Asn Tyr Leu
20 25 30
Arg Pro Asp Ile Lys Arg Gly Asn Ile Ser Pro Asp Glu Glu Glu Leu
35 40 45
Ile Ile Arg Leu His Lys Leu Leu Gly Asn Arg
50 55

<210> 778
<211> 175
<212> PRT
<213> Eucalyptus grandis

<400> 778
Met His His Pro Pro Asn Pro Asp Ser Leu Ser Leu Leu Gln Ser Ala
1 5 10 15
Arg Thr Pro Asn Ala Pro Pro Glu His Pro Val Pro Ser Thr Ser Arg
20 25 30
Arg Asp Glu Val Ala Val Leu Lys Ser Gln Lys Ala Gly Arg Glu Lys
35 40 45
Leu Arg Arg Asp Arg Leu Asn Glu His Phe Ile Glu Leu Gly Asn Thr
50 55 60
Leu Asp Pro Asp Arg Pro Lys Asn Asp Lys Ala Thr Ile Leu Ser Asp
65 70 75 80
Thr Val Gln Leu Leu Lys Asp Leu Thr Ala Gln Val Asn Gln Leu Lys
85 90 95
Ala Glu Tyr Ser Thr Phe Cys Glu Glu Ser Arg Glu Leu Thr Gln Glu
100 105 110
Lys Asn Asp Leu Lys Glu Glu Lys Ala Ser Leu Lys Ser Asp Ile Glu
115 120 125
Ser Leu Asn Ala Gln Tyr Gln Gln Arg Ala Arg Ala Met Phe Pro Trp

```
    130                 135                 140
Pro Ile Met Asp His Ser Val Val Met Ala Pro Pro Ser Tyr Pro Tyr
145                 150                 155                 160
Pro Val Pro Val Ala Val Pro Ser Gly Pro Ile Pro Val His Pro
                165                 170                 175
```

<210> 779
<211> 162
<212> PRT
<213> Eucalyptus grandis

<400> 779

```
Met Asn Val Glu Lys Leu Met Lys Met Ala Gly Ser Val Arg Thr Gly
 1               5                  10                  15
Gly Lys Gly Thr Met Arg Arg Lys Lys Lys Ala Val His Lys Thr Thr
            20                  25                  30
Thr Thr Asp Asp Lys Arg Leu Gln Ser Thr Leu Lys Arg Ile Gly Val
        35                  40                  45
Asn Ala Ile Pro Ala Ile Glu Glu Val Asn Ile Phe Lys Asp Asp Val
    50                  55                  60
Val Ile Gln Phe Val Asn Pro Lys Val Gln Ala Ser Ile Ala Ala Asn
65                  70                  75                  80
Thr Trp Val Val Ser Gly Ala Pro Gln Thr Lys Lys Leu Gln Asp Ile
                85                  90                  95
Leu Pro Gly Ile Ile Asn Gln Leu Gly Pro Asp Asn Leu Asp Asn Leu
            100                 105                 110
Arg Lys Leu Ala Glu Gln Phe Gln Lys Gln Ser Pro Gly Ala Ala Ala
        115                 120                 125
Thr Ala Gly Ala Thr Ala Met Gln Glu Asp Asp Asp Asp Glu Val Pro
    130                 135                 140
Glu Leu Val Pro Gly Glu Thr Phe Glu Ala Ala Ala Glu Glu Gly His
145                 150                 155                 160
Lys Ser
```

<210> 780
<211> 151
<212> PRT
<213> Eucalyptus grandis

<400> 780

```
Met Gly Glu Pro Ile Phe Leu Pro Gly Arg Thr Ser Leu Val Gly Ser
 1               5                  10                  15
Ile Ser Val Asn Val Val Gly Ile Gln His Asn Ala Gly Thr Phe Arg
            20                  25                  30
Ala Gly Glu Thr Val Ala Leu Val Arg Glu Pro Ser Asn Thr Asp Asp
        35                  40                  45
Glu Met Ala Ile Gln Val Leu Asn Thr Arg Gly Met Val Val Gly Tyr
    50                  55                  60
Ile Lys Arg Glu Ala Ala Lys Val Leu Ala Pro Leu Ile Asp Ser Gln
65                  70                  75                  80
Leu Ile Ser Val Tyr Ala Ile Val Pro Lys Val Pro Arg Val Glu Lys
                85                  90                  95
Leu Phe Phe Ile Asn Cys Gln Val Arg Val Leu Ala Arg Asp Asp Asp
            100                 105                 110
Phe Glu His Val Lys Ser Thr Ile Leu Glu Gly Lys Leu Met Leu Thr
        115                 120                 125
Pro Pro Val Gly Lys Glu Val Arg Gly Val Asn Glu Ser Phe Thr Leu
    130                 135                 140
Val Gly Gln Gly Val Glu Lys
145                 150
```

<210> 781
<211> 611
<212> PRT
<213> Eucalyptus grandis

<400> 781
Met Met Met Phe Glu Asp Met Gly Ile Cys Gly Asp Leu Asp Phe Phe
1 5 10 15
Ser Ala Pro Leu Gly Glu Gly His Gly Val Ala Pro Gln Thr Glu Pro
20 25 30
Glu Ala Thr Val Glu Asp Asp Tyr Ser Asp Glu Glu Ile Asp Val Asp
35 40 45
Glu Leu Glu Arg Arg Met Trp Arg Asp Lys Met Arg Leu Lys Arg Leu
50 55 60
Lys Glu Gln Asn Lys Gly Lys Glu Gly Val Asp Ile Ala Lys Gln Arg
65 70 75 80
Gln Ser Gln Glu Gln Ala Arg Arg Lys Lys Met Ser Arg Ala Gln Asp
85 90 95
Gly Ile Leu Lys Tyr Met Leu Lys Met Met Glu Val Cys Lys Ala Gln
100 105 110
Gly Phe Val Tyr Gly Ile Ile Pro Glu Lys Gly Lys Pro Val Thr Gly
115 120 125
Ala Ser Asp Asn Leu Arg Glu Trp Trp Lys Asp Lys Val Arg Phe Asp
130 135 140
Arg Asn Gly Pro Ala Ala Ile Ala Lys Tyr Gln Ala Asp His Ser Val
145 150 155 160
Pro Gly Lys Asn Asp Gly Cys Asn Pro Ile Gly Pro Thr Pro His Thr
165 170 175
Leu Gln Glu Leu Gln Asp Thr Thr Leu Gly Ser Leu Leu Ser Ala Leu
180 185 190
Met Gln His Cys Asp Pro Pro Gln Arg Arg Phe Pro Leu Glu Lys Gly
195 200 205
Val Pro Pro Pro Trp Trp Pro Thr Gly Asn Glu Asp Trp Trp Pro Gln
210 215 220
Leu Gly Leu Pro Lys Asp Gln Gly Ala Pro Pro Tyr Lys Lys Pro His
225 230 235 240
Asp Leu Lys Lys Ala Trp Lys Val Gly Val Leu Thr Ala Val Ile Lys
245 250 255
His Met Ser Pro Asp Ile Ala Lys Ile Arg Lys Leu Val Arg Gln Ser
260 265 270
Lys Cys Leu Gln Asp Lys Met Thr Ala Lys Glu Ser Ala Thr Trp Leu
275 280 285
Ala Ile Ile Asn Gln Glu Glu Ser Leu Ala Arg Glu Leu Tyr Pro Asp
290 295 300
Ser Cys Leu Pro Leu Ser Ser Ser Gly Gly Ser Gly Ser Leu Val Ile
305 310 315 320
Asn Asp Cys Ser Glu Tyr Asp Val Glu Gly Met Glu Asp Glu Pro Asn
325 330 335
Tyr Asp Val Gln Glu Arg Lys Pro Glu Asn Leu Asn Pro Pro Ser His
340 345 350
Leu Gly Leu Glu Arg Met Arg Gly Pro Phe Val Gln Gln Ser Pro Phe
355 360 365
Gln Met Lys Gly Glu Val Val Ser Asn Leu Asp Met Ala Arg Lys Arg
370 375 380
Lys Pro Cys Asn Asp Leu Asn Met Val Met Asp His Lys Ile Phe Thr
385 390 395 400
Cys Glu Phe Leu Gln Cys Pro Tyr Ser Glu Leu Arg Leu Gly Phe Arg
405 410 415
Asp Arg Thr Ser Arg Asp Asn His Gln Leu Ser Cys Pro Tyr Arg Ser
420 425 430

Asn Ser Ser Glu Phe Gly Gly Ser Asn Phe His Val Asn Glu Val Lys
435 440 445
Pro Val Ile Phe Pro Gln Gly Phe Val Gln Ser Lys Pro Met Thr Ser
450 455 460
Thr Val Asn Ser Ala Ser Thr Pro Phe Asp Leu Ser Gly Leu Gly Val
465 470 475 480
Pro Glu Asp Gly Gln Lys Val Ile Ser Asp Leu Met Ser Ile Tyr Asp
485 490 495
Thr Ser Ile Gln Gly Asn Lys Asn Met Asn Pro Ala Asn Asp Ala Ile
500 505 510
Ile Glu Asp Gln Ser Arg Pro Gln Pro Lys Leu Gln Gln Gln Asn Glu
515 520 525
Phe Val Gly Ser Phe Phe Gln Gln Pro Asn Ala Ser Ala Asn His His
530 535 540
Met Phe Ser Arg Glu Asp Ile Gln Phe Asp Arg Phe Lys Thr Met Asn
545 550 555 560
Ser Ser Phe Glu Ala Asn Asn His Asn His Asp Asn Leu Gln Leu Met
565 570 575
Phe Gly Ser Pro Phe Asp Leu Ser Ser Phe Asp Phe Lys Glu Glu Leu
580 585 590
Pro Gly Gly Val Met Asp Pro Leu Pro Lys Gln Asp Val Thr Ile Trp
595 600 605
Phe Gln Gln
610

<210> 782
<211> 133
<212> PRT
<213> Eucalyptus grandis

<400> 782
Met Val Lys Arg Asp Arg Glu Asp Thr Glu Val Glu Ala Leu Ala Leu
1 5 10 15
Ala Asn Cys Leu Met Leu Leu Ser Arg Val Gly Lys Ser Thr Asp Ser
20 25 30
Pro Trp Leu Asn His Lys Ser Arg Pro Thr Glu Arg Met Phe Ala Cys
35 40 45
Lys Thr Cys Asn Arg Glu Phe Ser Ser Phe Gln Ala Leu Gly Gly His
50 55 60
Arg Ala Ser His Lys Lys Pro Lys Leu Ser Gly Asp Leu Phe His Leu
65 70 75 80
Gly Arg Ser Ala Asp Ser Ser Pro Ala Lys Pro Lys Thr His Glu Cys
85 90 95
Ala Ile Cys Gly Leu Glu Phe Pro Leu Gly Gln Ala Leu Gly Gly His
100 105 110
Met Arg Arg His Arg Ala Ala Met Ala Glu Ser Leu Ala Thr Ala Glu
115 120 125
Lys Pro Val Pro Val
130

<210> 783
<211> 145
<212> PRT
<213> Eucalyptus grandis

<400> 783
Met Val Met Asp Ile Ser Asn Asp Asp Arg Tyr Leu Asn Glu Glu Ile
1 5 10 15
Gly Gly Pro Lys Asp Ala Leu Asp Asp Gly Thr Gln Pro Asn Asn Lys
20 25 30
Arg Lys Arg Gly Arg Ala Pro Lys Arg Ala Met Lys Ala Glu Arg Glu

35 40 45
Lys Leu Lys Arg Asp His Leu Asn Glu Leu Phe Asp Lys Leu Gly Ser
50 55 60
Leu Leu Glu Leu Ser Glu Pro Asn Asn Gly Lys Ala Ser Ile Ile Asn
65 70 75 80
Glu Thr Ile Arg Leu Leu Lys Asp Met Ile Ser Gln Ile Gln Ser Leu
85 90 95
Arg Lys Glu Asn Thr Thr Leu Leu Ser Glu Ser His Tyr Val Ala Ala
100 105 110
Glu Thr Asn Glu Leu Lys Asp Glu Asn Phe Ala Leu Glu Ala Gln Ile
115 120 125
Lys Asn Val Gln Arg Glu Leu Glu Asp Lys Leu Gly His Ser Lys Pro
130 135 140
Asp
145

<210> 784
<211> 322
<212> PRT
<213> Eucalyptus grandis

<400> 784
Glu Cys Leu Pro Leu Leu Asp Met Thr Gln Gln Pro Pro Trp Gln Glu
1 5 10 15
Leu Val Ala Thr Asp Leu His Gly Asn Glu Trp His Phe Arg His Ile
20 25 30
Phe Arg Gly Gln Pro Arg Arg His Leu Leu Thr Thr Gly Trp Ser Val
35 40 45
Phe Val Ser Ser Lys Lys Leu Ile Ala Gly Asp Ala Phe Ile Phe Leu
50 55 60
Arg Gly Glu Asp Gly Glu Leu Arg Val Gly Val Arg Arg Leu Met Arg
65 70 75 80
Gln Gln Ser Asn Met Pro Ser Ser Val Ile Ser Ser His Ser Met His
85 90 95
Leu Gly Val Leu Ala Thr Ala Ser His Ala Ile Ala Thr Gly Thr Leu
100 105 110
Phe Ser Val Phe Tyr Lys Pro Arg Thr Ser Arg Ser Glu Phe Ile Val
115 120 125
Ser Leu Asn Lys Tyr Leu Glu Ala Arg Ala His Lys Leu Ser Ile Gly
130 135 140
Met Arg Phe Lys Met Lys Phe Glu Gly Glu Glu Val Ser Glu Arg Arg
145 150 155 160
Phe Ser Gly Thr Ile Ile Gly Val Gly Asp Ser Met Ser Ser Gly Trp
165 170 175
Thr Asn Ser Glu Trp Arg Ser Leu Lys Val Gln Trp Asp Glu Pro Ser
180 185 190
Ser Ile Met Arg Pro Asp Arg Val Ser Ser Trp Glu Leu Glu Pro Leu
195 200 205
Val Val Thr Ala Pro Ser Asn Ser Gln Gln Val Gln Arg Lys Arg Ala
210 215 220
Arg Pro Thr Val Leu Pro Ser Ser Ser Val Gln Glu Leu Ser Ala Phe
225 230 235 240
Gly Gly Pro Lys Ala Pro Glu Tyr Ser Ser Asp Phe Leu His Gly Asp
245 250 255
Ser Gln Arg Gly Arg Asp Val Tyr Leu Ser Pro Lys Phe Ser Pro Ser
260 265 270
Ala Arg Ser Lys Ser Leu Asn Tyr Asn Gly Asn Gly Ser Pro Ala Ala
275 280 285
Leu Ser Gly Tyr Thr Val Asn Trp Pro Ser His Met Glu Thr Ile Thr
290 295 300
Asp Pro Cys Thr Pro Val Asn Gly Lys Glu Ser Ser Glu Lys Arg Glu

305 310 315 320
Ser Gly

<210> 785
<211> 50
<212> PRT
<213> Eucalyptus grandis

<400> 785
Met Ala Ser Gln Phe Asn Phe Lys Gly Ile Thr Asp Ala Ser Gln Ala
1 5 10 15
Glu Gly Val Ala Gly Lys Ser His Gly Asn His Ser Leu Thr Arg Gln
20 25 30
Pro Ser Ile Tyr Ala Leu Thr Phe Asp Glu Phe Gln Asn Thr Trp Gly
35 40 45
Gly Leu
50

<210> 786
<211> 152
<212> PRT
<213> Eucalyptus grandis

<400> 786
Glu Thr Ser Pro Ser Ser Ser Ser Leu Thr Thr Thr Thr Ala Pro Ala
1 5 10 15
Pro Ala Ala Ala Ala Ala Ala Ala Thr Thr Ser Ser Ser Ser Tyr Ser
20 25 30
Ser Ala Val Ala Val Ala Ala Thr Thr Ala Thr Thr Ser Ser Ser Ser
35 40 45
Thr Ser Ser Thr Gly Ser Asp Pro Ala Leu Glu Pro Ser Lys Arg Ser
50 55 60
Glu Asp Cys Thr Ser Gln Lys Gly Pro Gly Lys Ser Pro Ser Pro Gly
65 70 75 80
Ala His Pro Glu Glu Pro Ala Gly Lys Arg His Lys Ala Gly Gly Ser
85 90 95
Gly Glu His Pro Thr Tyr Arg Gly Val Arg Met Arg Asn Trp Gly Lys
100 105 110
Trp Val Ser Glu Ile Arg Glu Pro Arg Lys Lys Ser Arg Ile Trp Leu
115 120 125
Gly Thr Tyr Pro Thr Ala Glu Met Ala Ala Arg Ala His Asp Val Ala
130 135 140
Ala Leu Ala Ile Lys Gly Ser Phe
145 150

<210> 787
<211> 148
<212> PRT
<213> Eucalyptus grandis

<400> 787
Met Phe Pro Arg Pro Lys Val Asp Pro Ala Ser Ala Gly Thr Val Val
1 5 10 15
Ile Arg Glu Val Trp Ala His Asn Leu Glu Ser Glu Phe Asp Leu Ile
20 25 30
Arg Asp Val Val Asp Thr His Pro Phe Ile Ser Met Asp Thr Glu Phe
35 40 45
Pro Gly Val Val Phe Arg Pro Pro Pro Pro Pro Ser Ala Gly Gly His
50 55 60
Tyr Arg Arg Leu Arg Pro Ser Asp His Tyr Arg Leu Leu Lys Ser Asn

65 70 75 80
Val Asp Ala Leu Ser Leu Ile Gln Val Gly Leu Thr Phe Ser Asp Pro
85 90 95
Asp Gly Asn Leu Pro Asp Leu Gly Cys Pro Gly Gly Pro Arg Tyr Ile
100 105 110
Trp Glu Phe Asn Phe Arg Asp Phe Asp Val Ala Arg Asp Ala His Ala
115 120 125
Pro Asp Ser Ile Glu Leu Leu Arg Arg Gln Gly Ile Asp Phe Glu Arg
130 135 140
Asn Arg Ala Glu
145

<210> 788
<211> 248
<212> PRT
<213> Eucalyptus grandis

<400> 788
Lys Pro Ser Glu Arg Arg Gly Gly Pro Arg Gly Pro Phe Arg Gly Ser
1 5 10 15
Gly Gly Arg Arg Gly Gly Phe Asn Asn Gly Glu Ala Gly Glu Gly Glu
20 25 30
Arg Pro Arg Arg Thr Phe Glu Arg Arg Ser Gly Thr Gly Arg Gly Asn
35 40 45
Glu Phe Lys Arg Asp Gly Ala Gly Arg Gly Asn Trp Gly Thr Pro Thr
50 55 60
Asp Glu Ile Ala Pro Glu Pro Glu Glu Pro Val Val Glu Val Glu Lys
65 70 75 80
Asn Val Gly Ser Glu Lys Gln Leu Val Asp Glu Glu Ala Ala Asp Ala
85 90 95
Ser Lys Glu Asn Pro Leu Asn Glu Pro Glu Glu Lys Glu Pro Glu Asp
100 105 110
Lys Glu Met Thr Leu Glu Glu Tyr Glu Lys Val Arg Glu Glu Lys Arg
115 120 125
Lys Ala Leu Leu Ala Leu Lys Ala Glu Glu Arg Lys Val Glu Val Asp
130 135 140
Lys Glu Leu Lys Ser Met Gln Gln Leu Ser Ser Lys Lys Glu Asn His
145 150 155 160
Asp Ile Phe Ile Lys Leu Gly Ser Glu Lys Asp Lys Arg Lys Glu Ala
165 170 175
Ala Glu Lys Glu Glu Arg Ala Glu Lys Ser Val Ser Ile Asn Glu Phe
180 185 190
Leu Lys Pro Ala Glu Gly Glu Arg Tyr Tyr Asn Pro Gly Gly Arg Gly
195 200 205
Arg Gly Arg Gly Arg Gly Ala Arg Gly Gly Tyr Gly Gly Gly Gly Gly
210 215 220
Gly Gly Tyr Gly Arg Asp Ala Ala Ala Pro Ser Ile Lys Asp Pro Gly
225 230 235 240
Gln Phe Pro Ser Leu Gly Gly Lys
245

<210> 789
<211> 55
<212> PRT
<213> Eucalyptus grandis

<400> 789
Met Ser Phe Thr Gly Thr Gln Val Lys Cys Lys Ala Cys Glu Lys Thr
1 5 10 15
Val Tyr Pro Val Glu Gln Leu Ser Ala Asp Gly Val Ala Tyr His Lys
20 25 30

Ser Cys Phe Lys Cys Ser His Cys Lys Gly Thr Leu Lys Val Cys Gln
35 40 45
Phe Phe Gln Leu Val Tyr Asn
50 55

<210> 790
<211> 148
<212> PRT
<213> Eucalyptus grandis

<400> 790
Met Ile Asp Leu Asn Thr Val Glu Asp Asp Glu Thr Pro Ser Ser Gly
1 5 10 15
Ser Ser Pro Ala Ser Ser Leu Ser Ser Ala Ile Ser Ala Ser Asn Ile
20 25 30
Asn Ser Asn Pro Ala Tyr Pro Thr Ser Ser Ser Ser Ser Ser Ser Ser
35 40 45
Cys Ser Pro Leu Cys Leu Glu Leu Trp His Ala Cys Ala Gly Pro Leu
50 55 60
Ile Ser Leu Pro Lys Arg Gly Ser Leu Val Val Tyr Phe Pro Gln Gly
65 70 75 80
His Leu Glu His Val Ser Asp Phe Pro Thr Ser Val Phe Asp Leu Pro
85 90 95
Ser Gln Ile Phe Cys Arg Val Val Asp Val Lys Leu His Ala Asp Ala
100 105 110
Ser Thr Asp Asp Val Tyr Ala Gln Val Ser Leu Val Pro Glu Arg Glu
115 120 125
Gln Ile Glu His Lys Leu Arg Glu Gly Asp Asn Glu Ile Asp Leu Asp
130 135 140
Glu Asp Glu Ile
145

<210> 791
<211> 106
<212> PRT
<213> Eucalyptus grandis

<400> 791
Met Ala Ser His Pro Ser Asn His Ser Cys Gly Arg Pro His Gln Gly
1 5 10 15
Ala Phe Ala Asp Ala Leu Tyr Lys Glu Leu Trp His Ala Cys Ala Gly
20 25 30
Pro Leu Val Thr Leu Pro Arg Glu Gly Glu Arg Val Tyr Tyr Phe Pro
35 40 45
Gln Gly His Met Glu Gln Leu Glu Ala Ser Thr Asn Arg Gly Leu Glu
50 55 60
Gln Gln Met Pro Ser Phe Asp Leu Pro Ser Lys Ile Leu Cys Arg Val
65 70 75 80
Val Asn Ile Gln Leu Arg Ala Glu Pro Glu Thr Asp Glu Val Tyr Ser
85 90 95
Gln Ile Thr Leu Leu Pro Glu Pro Glu Gln
100 105

<210> 792
<211> 82
<212> PRT
<213> Eucalyptus grandis

<400> 792
Glu Gln Tyr Leu Asn Leu Ala Tyr Val Gln Gln Leu Glu Asn Ser Arg
1 5 10 15

```
Phe Arg Leu Met Gln Leu Glu Gln Glu Leu Gln Arg Ala Arg Gln Gln
            20                  25                  30
Gly Ile Phe Val Ser Ser Gly Asn Pro Gly Asp Leu Ser His Asn Met
        35                  40                  45
Ala Ala Ile Gly Asn Gly Ala Met Ala Phe Asp Thr Asp Tyr Ala Arg
    50                  55                  60
Trp Leu Asp Glu His Gln Arg Leu Ile Asn Asp Leu Arg Ser Gly Val
65                  70                  75                  80
Asn Phe


      <210> 793
      <211> 247
      <212> PRT
      <213> Eucalyptus grandis

      <400> 793
Phe Phe Leu Tyr Ile Ile Ser Leu Phe Leu Val Arg Glu Asn Ser Glu
 1               5                  10                  15
Arg Ser Arg Glu Gly Thr Ser Ser Asn Gly Asp Gly Lys Ser Glu Val
            20                  25                  30
Gln Gly Lys Val Ala Gly Glu Val Asp Ala Ala Ser Glu Asn Val Ser
        35                  40                  45
Gly Gly Ala Ile Glu Arg Pro Arg Ala Thr Gly Lys Leu Ala Ala Pro
    50                  55                  60
Val Asn Ser Pro Ser Met Ser Ser Ser Leu Asp Leu Lys Asn Ser Cys
65                  70                  75                  80
Met Asp Ala Asn Ala Asn Pro Val Ser Ile Leu Gln Pro Gly Val Val
                85                  90                  95
Pro Pro Glu Ala Trp Leu Gln Asn Glu Arg Glu Leu Lys Arg Glu Arg
            100                 105                 110
Arg Lys Gln Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Leu Arg Lys
        115                 120                 125
Gln Ala Glu Thr Glu Glu Leu Ala Lys Lys Val Asp Ser Leu Ser Ala
    130                 135                 140
Glu Asn Arg Ala Leu Lys Ser Glu Ile Ser Gln Leu Thr Glu Asn Ser
145                 150                 155                 160
Asp Lys Leu Arg Leu Glu Asn Ala Thr Leu Met Glu Arg Leu Glu Asn
                165                 170                 175
Ala Gln Gly Val Glu Lys Ala Val Glu Ser Leu Gly Lys Phe Asn Asp
            180                 185                 190
Asn Gly Leu Leu Ser Asp Lys Thr Glu Asn Leu Leu Ser Arg Val Asn
        195                 200                 205
Asn Ser Gly Ala Val Asp Arg Arg Ser Glu Asp Glu Gly Glu Ile Tyr
    210                 215                 220
Glu Arg Lys Ser Asn Ser Gly Ala Lys Leu His Gln Leu Leu Asp Ser
225                 230                 235                 240
Lys Pro Arg Thr Asp Ala Val
                245

      <210> 794
      <211> 145
      <212> PRT
      <213> Eucalyptus grandis

      <400> 794
Phe Ser Leu Ser Pro His His Leu Lys Met Glu Val Ala Pro Gln Ala
 1               5                  10                  15
Glu His His Gln Asn His His His His His His Gln Tyr His His Gln
            20                  25                  30
Pro Gln Gln Gly Glu Pro Gly Ser Tyr Phe Leu Ser Ala Pro Pro Pro
```

```
        35                  40                  45
Pro Pro His Tyr Ser Ser Ser Gly Leu Cys Tyr Gly Gly Gly Val Gly
    50                  55                  60
Asp Asn Asn Asn Gly Gly Tyr Leu His Ser Pro Leu Ser Val Met Pro
65                  70                  75                  80
Leu Lys Ser Asp Gly Ser Leu Cys Ile Met Glu Ala Leu Thr Arg Ser
                85                  90                  95
Arg Pro Gln Gly Leu Gly Gln Gly Ser Thr Pro Lys Leu Glu Asp Phe
            100                 105                 110
Leu Gly Gly Ala Ser Ala Thr Val Thr Ala Thr Thr Met Pro Leu Ser
        115                 120                 125
Leu Asp Ser Leu Tyr Ser Tyr Gln Gln Ser Ala Asp Pro Glu Lys Gln
    130                 135                 140
Ser
145

      &lt;210&gt; 795
      &lt;211&gt; 220
      &lt;212&gt; PRT
      &lt;213&gt; Eucalyptus grandis

      &lt;400&gt; 795
Glu Thr Gln Arg Glu Lys Val Glu Arg Glu Arg Glu Thr Ser Ile Pro
 1               5                  10                  15
Ser Gln Ser Pro Gln Pro Thr Ile Leu Pro Pro Thr Ala Ser Ser Pro
            20                  25                  30
Gly Arg Ser Asp Pro Pro Gly Asp Ala Thr Thr Met Val Lys Pro Ser
        35                  40                  45
Gly Gly Gly Gly Asp Arg Ala Pro Pro Leu Ala Pro Phe Leu Ser Lys
    50                  55                  60
Cys Tyr Glu Met Val Glu Asp Glu Ala Thr Asp Pro Ile Ile Ala Trp
65                  70                  75                  80
Gly Ser Ala Gly Asp Thr Phe Val Ile Trp Asp Ile Thr Gln Phe Thr
                85                  90                  95
Leu Gln Leu Leu Pro His Tyr Phe Lys His Ser Asn Phe Ser Ser Phe
            100                 105                 110
Met Arg Gln Leu Asn Ile Tyr Gly Phe Arg Lys Val Asp Ser Asp Arg
        115                 120                 125
Trp Glu Phe Ala Asn Asp Gly Phe Ile Arg Gly Gln Lys His Met Leu
    130                 135                 140
Lys Asn Ile Arg Arg Arg Lys Asn Val Gln Val Val Asp Gln Lys Lys
145                 150                 155                 160
Ser Leu Gln Lys Gln Asp Asn Ser Val Glu Glu Val Asp Lys Ile Lys
                165                 170                 175
Ile Asp Gly Leu Trp Lys Glu Val Glu Asn Leu Lys Ile Asp Lys Thr
            180                 185                 190
Val Leu Ser Leu Glu Leu Gly Lys Val Arg Gln Leu Gln Glu Thr Ser
        195                 200                 205
Asp Asn Lys Leu Val Leu Leu Arg Asp Arg Val Gln
    210                 215                 220

      &lt;210&gt; 796
      &lt;211&gt; 212
      &lt;212&gt; PRT
      &lt;213&gt; Eucalyptus grandis

      &lt;400&gt; 796
Met Ile Gly Ala Ala Thr Asn Gln Ile Pro Pro Pro Pro Pro Pro Pro
 1               5                  10                  15
Gln Pro Gln Gln Ala Ala Pro Ala Ala Ala Ala Ile Arg Phe Pro Asp
            20                  25                  30
```

```
Ser Val Tyr Asn Ala Leu Arg Val Gly Ala Val Phe Gln Arg Leu Ser
        35                  40                  45
Lys His Leu Ala Thr Ile Gly Lys Gly Ser Gly Leu Ser Ala Ser Cys
    50                  55                  60
Gly Thr Ser Met Glu Phe Leu Asn Ser Cys Leu Cys Leu Ala Arg Gly
65                  70                  75                  80
Ile Asp Tyr Ala Val Ala Asn Asn Glu Val Leu Pro Lys Ala His Glu
                85                  90                  95
Leu Pro Val Leu Leu Lys Arg Leu Cys Leu Leu Lys Asp Asp Ser Phe
            100                 105                 110
Tyr Leu Ser Val Ile Met Val Leu Met Ile Ser Val Lys Asn Ala Cys
        115                 120                 125
Lys Tyr Lys Trp Phe Ser Glu Lys Asp Cys Gln Glu Leu Leu Ala Leu
    130                 135                 140
Val Asp Glu Ile Gly Lys Asn Phe Gln Ser Pro Arg Asp Ala Ala Val
145                 150                 155                 160
Gly Ser Thr Ala Ser Phe Ser Arg Val Ser Ser Ile Phe Ala Arg Phe
                165                 170                 175
Tyr Pro Gln Leu Lys Met Gly Tyr Asp Leu Ile Ser Leu Glu Val Glu
            180                 185                 190
Pro Gly Tyr Ala Ala Leu Val Asn Asp Phe His Ile Ser Lys Ser Met
        195                 200                 205
Val His Ser Pro
    210
```

<210> 797
<211> 269
<212> PRT
<213> Eucalyptus grandis

<400> 797

```
Met Asn Ser Thr Thr Thr Gln Phe Val Ser Ser Arg Arg Met Gly Met
 1               5                  10                  15
Tyr Asp Pro Ile His Gln Ile Gly Met Trp Asp Glu Asn Phe Lys Gln
            20                  25                  30
Asn Gly Asn Pro Asn Ala Pro Pro Ala Leu Ile Ile Pro Met His Ala
        35                  40                  45
Asn Leu Asp Asn Gln Ser Glu Asp Thr Ser His Gly Ser Gln Asp Thr
    50                  55                  60
Ala Gly Lys Tyr Glu Gln Glu Thr Ser Lys Pro Tyr Asp Lys Val Gln
65                  70                  75                  80
Arg Arg Leu Ala Gln Asn Arg Glu Ala Ala Arg Lys Ser Arg Leu Arg
                85                  90                  95
Lys Lys Ala Tyr Val Gln Gln Leu Glu Ala Ser Arg Leu Lys Leu Met
            100                 105                 110
Gln Leu Glu Gln Glu Val Asp Arg Ala Arg Gln Gln Gly Val Tyr Met
        115                 120                 125
Ala Ser Gly Val Asp Ser Ala Tyr Pro Gly Tyr Gly Gly Cys Leu Asn
    130                 135                 140
Ser Gly Ile Val Ala Phe Glu Met Glu Tyr Gly His Trp Ile Asp Glu
145                 150                 155                 160
Gln Asn Arg Gln Ile Cys Glu Leu Arg Ala Ala Leu Asn Asp His Arg
                165                 170                 175
Thr Asp Val Glu Leu Arg Ile Leu Val Glu Ser Gly Met Asn His Tyr
            180                 185                 190
Leu Glu Leu Phe Arg Met Lys Ala Val Ala Ser Lys Ala Asp Val Phe
        195                 200                 205
Tyr Val Met Ser Gly Met Trp Arg Thr Ser Ser Glu Arg Phe Phe Leu
    210                 215                 220
Trp Ile Gly Gly Phe Arg Pro Ser Glu Leu Leu Lys Val Leu Met Pro
225                 230                 235                 240
```

Gln Leu Asp Pro Leu Ser Asp Gln Gln Trp Ala Phe Val Ser Asn Leu
245 250 255
Arg Gln Ala Cys Gln Gln Ala Glu Asp Ala Leu Lys Gln
260 265

<210> 798
<211> 145
<212> PRT
<213> Eucalyptus grandis

<400> 798
Ile Asn Thr Thr Pro Gln Phe Leu Ser Leu Arg Ser His Pro Asn Arg
1 5 10 15
His Pro Gln Ser Leu Ser Phe Ser Leu Phe Phe Ser Val Cys Pro Val
20 25 30
Cys Asp Lys Gly Phe Pro Ser Tyr Gln Ala Leu Gly Gly His Lys Ala
35 40 45
Ser His Arg Lys His Ala Ser Ser Ala Ala Ala Ala Ala Gly Gly Asp
50 55 60
Asp Gln Pro Thr Thr Ser Ser Thr Ser Ala Ala Thr Thr Ser Ser Gly
65 70 75 80
Val Ser Gly Lys Val His Glu Cys Ser Ile Cys His Lys Ser Phe Pro
85 90 95
Thr Gly Gln Ala Leu Gly Gly His Lys Arg Cys His Tyr Glu Ala Pro
100 105 110
Ala Pro Ile Pro Ala Ser Phe Ser Ala Pro Ser Ala Ala Ala Ala Pro
115 120 125
Ala Ala Ser Gly Val Ser Val Ser Glu Gly Val Gly Ser Thr His Thr
130 135 140
Gln
145

<210> 799
<211> 121
<212> PRT
<213> Eucalyptus grandis

<400> 799
Arg His His Lys Ile Gln Gln Leu Gln Arg Ala Arg Ser Glu Leu Ala
1 5 10 15
Arg Met Phe Ser Leu Glu Gly Gln Leu Glu Asp Pro Val Arg Ser Gly
20 25 30
Trp Gln Leu Val Phe Val Asp Arg Glu Asn Asp Ser Leu Leu Leu Gly
35 40 45
Asp Gly Pro Trp Pro Glu Phe Val Asn Ser Val Trp Cys Ile Lys Ile
50 55 60
Leu Ser Pro Gln Glu Val Gln Gln Met Gly Lys Gln Asp Leu Glu Leu
65 70 75 80
Leu Asn Ser Ile Pro Val Gln Arg His Ser Asn Gly Gly Cys Asp Glu
85 90 95
Phe Thr Asn Arg Gln Asp Ser Arg Thr Ile Asn Ser Gly Ile Pro Ser
100 105 110
Val Gly Ser Leu Asp Tyr Gly Thr Leu
115 120

<210> 800
<211> 182
<212> PRT
<213> Eucalyptus grandis

<400> 800

Thr Asp Asp Thr Gly Asp Lys Asn His Arg Phe Glu Gly Gly Gln Leu
1 5 10 15
Gly Val Ala Ala Ala Ser Asp Ser Ser Asp Arg Ser Lys Glu Lys Ala
20 25 30
Thr Asp Gln Lys Thr Leu Arg Arg Leu Ala Gln Asn Arg Glu Ala Ala
35 40 45
Arg Lys Ser Arg Leu Arg Lys Lys Ala Tyr Val Gln Gln Leu Glu Ser
50 55 60
Ser Arg Leu Lys Leu Thr Gln Leu Glu Gln Glu Leu Gln Arg Ala Arg
65 70 75 80
Gln Gln Gly Ile Phe Ile Ser Gly Ser Gly Glu Gln Ser His Ser Met
85 90 95
Ser Gly Asn Gly Ala Leu Ala Phe Asp Val Glu Tyr Ala Arg Trp Leu
100 105 110
Glu Glu His Asn Lys Val Val Asn Glu Leu Arg Asn Ala Val Asn Ala
115 120 125
His Ala Gly Asp Thr Glu Leu Arg Thr Ile Val Asp Asn Val Ala Ala
130 135 140
His Phe Asp Glu Ile Phe Lys Leu Lys Gly Thr Ala Ala Lys Ala Asp
145 150 155 160
Val Phe His Ile Leu Ser Gly Met Trp Lys Thr Pro Ala Glu Arg Cys
165 170 175
Phe Met Trp Ile Gly Gly
180

<210> 801
<211> 74
<212> PRT
<213> Eucalyptus grandis

<400> 801
Met Ser Phe Thr Gly Thr Gln Val Lys Cys Lys Ala Cys Glu Lys Thr
1 5 10 15
Val Tyr Pro Val Glu Gln Leu Ser Ala Asp Gly Val Ala Tyr His Lys
20 25 30
Ser Cys Phe Lys Cys Ser His Cys Lys Gly Thr Leu Lys Leu Ser Ser
35 40 45
Tyr Ser Ser Met Glu Gly Val Leu Tyr Cys Lys Pro His Phe Glu Gln
50 55 60
Leu Phe Lys Glu Thr Gly Asn Phe Asn Lys
65 70

<210> 802
<211> 194
<212> PRT
<213> Eucalyptus grandis

<400> 802
Lys Ser Val Phe His Val Phe Tyr Ser Pro Arg Ala Ser His Ala Glu
1 5 10 15
Phe Val Val Pro Tyr Gln Lys Tyr Leu Lys Ser Ile Asn Asn Val Ile
20 25 30
Cys Ile Gly Thr Arg Phe Lys Met Arg Val Asp Val Asp Asp Ala Pro
35 40 45
Glu Lys Arg Cys Thr Gly Val Val Thr Arg Ile Gly Asp Leu Asp Pro
50 55 60
Tyr Arg Trp Pro Asn Ser Lys Trp Arg Cys Leu Met Val Gln Trp Asp
65 70 75 80
Asp Asp Ile Thr Asn Gly His Gln Asp Arg Val Ser Pro Trp Glu Ile
85 90 95
Asp Pro Ser Val Ser His Ser Pro Leu Ser Ile Gln Ser Ser Pro Arg

```
            100                     105                     110
Leu Lys Arg Pro Arg Thr Ser Leu Pro Thr Met Pro Pro Val Pro Gly
        115                     120                     125
Gly Gly Val Arg Leu Leu Asp Phe Glu Glu Ser Leu Arg Ser Ser Lys
    130                     135                     140
Val Leu Gln Gly Gln Glu Lys Leu His Leu Val Ser Pro Val Tyr Gly
145                     150                     155                     160
Arg Asp Thr Leu Asn Cys Gln Val Asp Phe Glu Gln Ser Pro Ala His
                165                     170                     175
Gln Gly Leu Ala Ser Val Val Ser Lys Lys Arg Pro Thr Ile Ser Met
            180                     185                     190
Ser Thr
```

<210> 803
<211> 282
<212> PRT
<213> Eucalyptus grandis

<400> 803

```
Arg Arg Ala Asn Arg Pro Gln Thr Val Met Pro Ser Ser Val Leu Ser
 1               5                  10                  15
Ser Asp Ser Met His Ile Gly Leu Leu Ala Ala Ala Ala His Ala Ala
            20                  25                  30
Ala Thr Asn Ser Arg Phe Thr Ile Phe Tyr Asn Pro Arg Ala Ser Pro
        35                  40                  45
Ser Glu Phe Val Ile Pro Leu Ala Lys Tyr Val Lys Ala Val Tyr His
    50                  55                  60
Thr Arg Val Ser Val Gly Met Arg Phe Arg Met Leu Phe Glu Thr Glu
65                  70                  75                  80
Glu Ser Ser Val Arg Arg Tyr Met Gly Thr Ile Thr Gly Ile Ser Asp
                85                  90                  95
Leu Asp Pro Val Arg Trp Gln Asn Ser His Trp Arg Ser Val Lys Val
            100                 105                 110
Gly Trp Asp Glu Ser Thr Ala Gly Glu Arg Gln Pro Arg Val Ser Leu
        115                 120                 125
Trp Glu Ile Glu Pro Leu Thr Thr Phe Pro Met Tyr Pro Ser Pro Phe
    130                 135                 140
Pro Leu Arg Leu Lys Arg Pro Trp Pro Ser Gly Leu Pro Ser Phe His
145                 150                 155                 160
Ala Leu Arg Asp Gly Asp Met Ser Ile Ser Ser Ser Leu Met Trp Leu
                165                 170                 175
Gln Gly Val Gly Asp Gln Gly Val Gln Ser Leu Asn Phe Gln Gly Phe
            180                 185                 190
Gly Met Thr Pro Trp Leu Gln Pro Arg Tyr Asp Thr Ser Met Ala Ala
        195                 200                 205
Leu Gln Thr Asp Val Tyr Gln Ala Met Ala Ser Ala Ala Leu Gln Asp
    210                 215                 220
Met Arg Ala Val Asp Pro Ser Lys Cys Ala Ser Gln Ser Leu Leu Pro
225                 230                 235                 240
Leu Gln Gln Ser Gln Asn Val Pro Met Gly Gln Ala Ser Ile Ile Gln
                245                 250                 255
Arg Gln Met Leu Gln Gln Ser Gln Ser Gln Asn Ser Leu Leu Gln Gly
            260                 265                 270
Phe Gln Glu Asn Gln Ala Lys Pro Lys Gly
        275                 280
```

<210> 804
<211> 177
<212> PRT
<213> Eucalyptus grandis

```
     <400> 804
Asp Lys Leu Arg Glu Ile Glu Asn Ser Leu Phe Gly Pro Glu Ser Asp
 1               5                   10                  15
Ile Ser Asp Ser Cys Asn Cys Cys Leu Asn Ser Gly Ser His Gln Phe
            20                  25                  30
Pro Ser Thr Gly Gln Trp Asn Val Asn Gln Met Ile Glu Met Ile Pro
        35                  40                  45
Lys Leu Asp Leu Lys Asp Met Leu Ile Val Cys Ala Gln Ala Val Ala
    50                  55                  60
Glu Ala Asp Met Pro Arg Thr Ala Ala Leu Met Glu Val Leu Glu Arg
65                  70                  75                  80
Met Val Ser Val Ser Gly Asp Pro Ile Gln Arg Leu Gly Ala Tyr Leu
                85                  90                  95
Leu Glu Gly Leu Arg Ala Arg Leu Glu Ser Ser Gly Ser Ile Ile Tyr
            100                 105                 110
Arg Lys Leu Lys Cys Lys Glu Pro Thr Gly Ser Glu Leu Met Ser Tyr
        115                 120                 125
Met Ser Ile Leu Tyr Gln Ile Cys Pro Tyr Trp Lys Phe Ala Tyr Glu
    130                 135                 140
Ser Ala Asn Val Val Ile Gly Glu Ala Ile Lys Tyr Glu Ser Arg Ile
145                 150                 155                 160
His Ile Ile Asp Phe Gln Ile Ala Gln Gly Ser Gln Trp Ile Pro Ile
                165                 170                 175
Ile


     <210> 805
     <211> 86
     <212> PRT
     <213> Eucalyptus grandis

     <400> 805
Met Gly Arg Ser Pro Arg Cys Asp Lys Asp Gly Leu Asn Lys Gly Ala
 1               5                   10                  15
Trp Thr Ala Ala Glu Asp Gln Ile Leu Met Asp Tyr Val Lys Leu His
            20                  25                  30
Gly Glu Gly Lys Trp Ser Arg Leu Ser Arg Glu Thr Gly Leu Arg Arg
        35                  40                  45
Cys Gly Lys Ser Cys Arg Leu Arg Trp Met Asn Tyr Leu Arg Pro Asp
    50                  55                  60
Ile Lys Arg Gly Asn Ile Ser Pro Asp Glu Glu Glu Leu Ile Ile Arg
65                  70                  75                  80
Leu His Lys Leu Leu Gly
                85

     <210> 806
     <211> 133
     <212> PRT
     <213> Eucalyptus grandis

     <400> 806
Met Arg Leu Ser Ser Ser Gly Phe Asn His Gln Ser Pro Glu Ala Ser
 1               5                   10                  15
Asn Ala Gly Glu Lys Lys Cys Leu Asn Ser Glu Leu Trp His Ala Cys
            20                  25                  30
Ala Gly Pro Leu Val Ser Leu Pro Pro Val Gly Ser Arg Val Val Tyr
        35                  40                  45
Phe Pro Gln Gly His Ser Glu Gln Val Ala Ala Ser Thr Asn Lys Glu
    50                  55                  60
Val Asp Ala His Ile Pro Asn Tyr Pro Asn Leu Ser Pro Gln Leu Ile
```

```
65                  70                  75                  80
Cys Gln Leu His Asn Val Thr Met His Ala Asp Val Glu Thr Asp Glu
                85                  90                  95
Val Tyr Ala Gln Met Thr Leu Gln Pro Leu Ser Pro Gln Glu Gln Lys
            100                 105                 110
Asp Leu Tyr Leu Leu Pro Ala Glu Leu Gly Thr Pro Ser Lys Gln Pro
        115                 120                 125
Thr Asn Tyr Phe Cys
    130

     <210> 807
     <211> 222
     <212> PRT
     <213> Eucalyptus grandis

     <400> 807
Ser Pro Phe Leu Ser Leu Thr Thr Ser Ser Ser Ser Ser Pro Pro Arg
 1               5                  10                  15
Arg Lys Ile Arg Thr Leu Gly Arg Ala Ala Asn Arg Arg Asn Pro Ser
            20                  25                  30
Pro Ala Glu Val Ala Ala Ala Ala Val His Ala Tyr Leu Ser Arg Arg
        35                  40                  45
Arg Pro Ala Glu Arg Ile Leu Leu Arg Ser Gly Pro Met Ser Pro Ala
    50                  55                  60
Arg Ser Lys Pro Ile Ala Ile Arg Ala Val Phe Tyr Ala Asn Leu Glu
65                  70                  75                  80
Ser Glu Phe Ala Leu Ile Arg Ser Val Val Asp Arg Phe Pro Ile Ile
                85                  90                  95
Ser Met Asp Thr Glu Phe Pro Gly Thr Val Ile Arg Pro Gly Pro Ala
            100                 105                 110
Gly Gly Gly Gly Gly Arg Ala Leu Pro Pro Pro Glu Ser Asn Tyr Gly
        115                 120                 125
Leu Leu Lys Ala Asn Val Asp Arg Met His Met Ile Gln Ile Gly Leu
    130                 135                 140
Thr Leu Ser Asp Gly Glu Gly Asn Leu Pro Asp Phe Gly Thr Lys Cys
145                 150                 155                 160
Ala Tyr Ile Trp Glu Phe Asn Phe Arg Asp Phe Asp Ala Ala Arg Asp
                165                 170                 175
Val Gln Asn Pro Asp Ser Val Ala Leu Leu Arg Lys Gln Gly Ile Asp
            180                 185                 190
Phe Glu Met Asn Arg Gln Lys Gly Ala Asp Ser Ala Arg Phe Gly Glu
        195                 200                 205
Leu Leu Met Ser Ser Gly Leu Val Cys Asn Asp Glu Val Ser
    210                 215                 220

     <210> 808
     <211> 111
     <212> PRT
     <213> Eucalyptus grandis

     <400> 808
Arg Gly Gly Phe Asn Met Glu Lys Leu Ala Arg Gly Ser Val Gln Glu
 1               5                  10                  15
Glu His Leu Asn Ala Ala Val Ala Leu Asp Glu Gly Trp Tyr Cys Thr
            20                  25                  30
Pro Arg Met Leu His Phe Ser Phe Glu Asn Glu Phe Lys Arg Asp Gly
        35                  40                  45
Ala Gly Arg Gly Asn Trp Gly Thr Pro Thr Asp Glu Ile Ala Pro Glu
    50                  55                  60
Pro Glu Glu Pro Val Val Glu Val Glu Lys Asn Val Gly Ser Glu Lys
65                  70                  75                  80
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Gln Leu Val Asp Glu Glu Ala Ala Asp Ala Ser Lys Glu Asn Pro Leu
                85                  90                  95
Asn Glu Pro Glu Glu Lys Glu Pro Glu Asp Lys Glu Met Thr Leu
            100                 105                 110

      <210> 809
      <211> 159
      <212> PRT
      <213> Eucalyptus grandis

      <400> 809
Gln Ser Gly Leu Pro Leu Asp Asp Arg Pro Glu Gly Ala Arg Ser Pro
 1               5                  10                  15
Ser Pro Glu Pro Ile Tyr Asp Asn Met Gly Ile Arg Ile Asn Thr Arg
            20                  25                  30
Glu Tyr Arg Ala Arg Glu Arg Leu Asn Lys Glu Arg Gln Asp Ile Ile
        35                  40                  45
Thr Gln Ile Ile Lys Arg Asn Pro Ala Phe Lys Pro Pro Ala Asp Tyr
    50                  55                  60
Arg Pro Pro Lys Leu Gln Lys Lys Leu Tyr Ile Pro Met Lys Glu Tyr
65                  70                  75                  80
Pro Gly Tyr Asn Phe Ile Gly Leu Ile Ile Gly Pro Arg Gly Asn Thr
                85                  90                  95
Gln Lys Arg Met Glu Arg Glu Thr Gly Ala Lys Ile Val Ile Arg Gly
            100                 105                 110
Lys Gly Ser Val Lys Glu Gly Arg Leu Gln Gln Lys Arg Asp Leu Lys
        115                 120                 125
Pro Asp Pro Ala Glu Asn Glu Asp Leu His Val Leu Val Glu Ala Glu
    130                 135                 140
Thr Gln Glu Ala Leu Asp Ala Ala Ala Gly Met Val Glu Lys Leu
145                 150                 155

      <210> 810
      <211> 387
      <212> PRT
      <213> Eucalyptus grandis

      <400> 810
Met Cys Gly Gly Ala Ile Ile Ser Asp Phe Ile Pro Asn Gln Arg Ala
 1               5                  10                  15
Arg Arg Leu Thr Ser Asp Phe Leu Trp Pro Asp Leu Lys Arg Ser Ala
            20                  25                  30
Gly Lys Gln Ser Arg Arg Pro Ala Arg Ser Glu Val Val Asp Val Val
        35                  40                  45
Asp Asp Asp Phe Glu Ala Asp Phe Gln Gly Phe Lys Asp Glu Ser Asp
    50                  55                  60
Val Glu Asp Asp Phe Asp Asp Glu Val Glu Val Asp Val Lys Pro Phe
65                  70                  75                  80
Ala Phe Ser Ala Ala Glu Pro Arg Tyr Ser Lys Gly Ser Ser Thr Thr
                85                  90                  95
Lys Ser Val Glu Tyr Asn Gly Gln Ala Glu Lys Ser Ala Lys Arg Lys
            100                 105                 110
Arg Lys Asn Gln Tyr Arg Gly Ile Arg Gln Arg Pro Trp Gly Lys Trp
        115                 120                 125
Ala Ala Glu Ile Arg Asp Pro Arg Lys Gly Val Arg Val Trp Leu Gly
    130                 135                 140
Thr Phe Asn Thr Ala Glu Glu Ala Ala Arg Ala Tyr Asp Ala Glu Ala
145                 150                 155                 160
Arg Arg Ile Arg Gly Lys Lys Ala Lys Val Asn Phe Pro Asp Asp Ser
                165                 170                 175
Ser Ser Ala Ser Ser Lys Arg Ser Val Lys Ser Asn Val Gln Lys Leu
```

180 185 190
Pro Lys Thr Thr Thr Asn Asn Val Gln Pro Asn Leu Asn Gln Asn Phe
195 200 205
Asn Tyr Ala Asn Ser Ser Asp Asp Asp Ile Tyr Ser Ser Met Gly Phe
210 215 220
Val Glu Glu Lys Pro Pro Thr Asn Gln Phe Tyr Met Asp Ala Leu Asn
225 230 235 240
Ala Gln Gly Val Ser Gly Met Asn Ser Leu Ser Pro Ala Asp Asn Ala
245 250 255
Pro Leu Tyr Phe Asn Ser Asp Gln Gly Ser Asn Ser Phe Glu Cys Ser
260 265 270
Asp Phe Gly Trp Gly Glu Asn Ala Pro Arg Thr Pro Asp Val Ser Ser
275 280 285
Val Leu Ser Ala Thr Leu Glu Val Asp Glu Ser Gln Phe Glu Asp Ala
290 295 300
Asn Pro Arg Lys Lys Ile Arg Ser Ala Ser Asp Asp Val Ser Glu Glu
305 310 315 320
Glu Asn Thr Ala Ala Lys Thr Phe Ser Glu Glu Leu Ser Ala Phe Glu
325 330 335
Ser Asp Met Lys Phe Phe Gln Met Pro Phe Val Asp Gly Gly Trp Asp
340 345 350
Pro Ser Val Glu Ala Leu Leu Gly Gly Glu Ala Thr Gln Asp Gly Gly
355 360 365
Asn Ala Val Asp Leu Trp Ser Phe Asp Asp Leu Ala Pro Met Met Gly
370 375 380
Gly Val Phe
385

<210> 811
<211> 219
<212> PRT
<213> Eucalyptus grandis

<400> 811
His Gly Gly Ala Ala Gly Phe Leu Gly Pro Arg Ala Val Pro Met Lys
1 5 10 15
Gln Ala Gly Leu Ala Gln Lys Pro Thr Lys Leu Tyr Arg Gly Val Arg
20 25 30
Gln Arg His Trp Gly Lys Trp Val Ala Glu Ile Arg Leu Pro Lys Asn
35 40 45
Arg Thr Arg Leu Trp Leu Gly Thr Phe Asp Thr Ala Glu Glu Ala Ala
50 55 60
Leu Ala Tyr Asp Lys Ala Ala Tyr Arg Leu Arg Gly Asp Phe Ala Arg
65 70 75 80
Leu Asn Phe Pro His Leu Lys His Lys Gly Ser His Ile Gln Gly Asp
85 90 95
Phe Gly Asp Tyr Lys Pro Leu His Ser Ser Val Asp Ala Lys Leu Gln
100 105 110
Ala Ile Cys Gln Asp Met Ala Glu Lys Pro Ala Asp Gly Lys Lys Arg
115 120 125
Arg Ser Ala Pro Ala Gly Gly Gly Ser Ser Ala Ala Ala Ala Ser Pro
130 135 140
Arg Arg Pro Glu Pro Glu Pro Glu Pro Val Lys Thr Glu Val Gly Val
145 150 155 160
Ser Ala Ala Thr Ser Ser Ser Pro Glu Ser Asp Asp Ala Ser Val Glu
165 170 175
Glu Ser Ser Pro Leu Ser Glu Leu Thr Phe Asn Asp Phe Val Glu Pro
180 185 190
Gln Trp Glu Ser Val Gly Val Pro Glu Asn Phe Ser Leu Gln Lys Tyr
195 200 205
Pro Ser Glu Ile Asp Trp Ala Ala Ile Tyr Ser

210 215

<210> 812
<211> 75
<212> PRT
<213> Eucalyptus grandis

<400> 812
Met Lys Glu Arg Gln Arg Trp Arg Ala Glu Glu Asp Ala Leu Leu Arg
1 5 10 15
Ala Tyr Val Lys Gln Tyr Gly Pro Arg Glu Trp His Leu Val Ser Gln
20 25 30
Arg Met Asn Thr Pro Leu Asn Arg Asp Ala Lys Ser Cys Leu Glu Arg
35 40 45
Trp Lys Asn Tyr Leu Lys Pro Gly Ile Lys Lys Gly Ser Leu Ser Glu
50 55 60
Glu Glu Gln Arg Leu Val Phe His Leu Leu Pro
65 70 75

<210> 813
<211> 235
<212> PRT
<213> Eucalyptus grandis

<400> 813
Val Val Leu Pro Ser Ser Gly Met Val Lys Ser Ser Gly Gly Ala Gly
1 5 10 15
Asp Ser Asp His Ser Asp Leu Glu Ala Ser Val Val Lys Glu Ala Asp
20 25 30
Ser Ser Arg Val Val Glu Pro Glu Lys Arg Pro Arg Lys Arg Gly Arg
35 40 45
Lys Pro Ala Asn Gly Arg Glu Glu Pro Leu Asn His Val Glu Ala Glu
50 55 60
Arg Gln Arg Arg Glu Lys Leu Asn Gln Arg Phe Tyr Ala Leu Arg Ala
65 70 75 80
Val Val Pro Asn Val Ser Lys Met Asp Lys Ala Ser Leu Leu Gly Asp
85 90 95
Ala Ile Ala Tyr Ile Lys Glu Leu Asn Ser Lys Leu Gln Thr Thr Glu
100 105 110
Ser Asp Lys Glu Asn Leu Gln Lys Gln Met Glu Ser Leu Lys Lys Glu
115 120 125
Leu Thr Asn Lys Asp Ser Arg Ser Ala Leu Pro Gln Ser Asp Lys Asp
130 135 140
Leu Ser Ile Ser Ser Asn His Gly Ala Lys Leu Ile Glu Leu Asp Val
145 150 155 160
Asp Val Lys Ile Ile Gly Trp Asp Val Met Ile Arg Ile Gln Ser Ser
165 170 175
Lys Lys Asn His Pro Ala Ala Lys Leu Met Gln Ala Leu Met Glu Leu
180 185 190
Asp Leu Asp Val His His Ala Ser Val Ser Val Val Asn Asp Leu Met
195 200 205
Ile Gln Gln Ala Thr Val Lys Met Ser Gly Arg Phe Tyr Ser Gln Glu
210 215 220
Gln Leu Arg Leu Ala Leu Ser Ser Lys Ile Gly
225 230 235

<210> 814
<211> 111
<212> PRT
<213> Eucalyptus grandis

<400> 814
Glu Leu Lys Pro Asp Lys Ile Gly Leu Gln Arg Ser Glu Gln Leu Arg
1 5 10 15
Asp Leu Tyr Glu Ser Leu Leu Glu Gly Glu Thr Asp Ala Gln Asn Lys
20 25 30
Arg Pro Ser Ala Ala Leu Ser Pro Glu Asp Leu Thr Asp Glu Glu Trp
35 40 45
Tyr Tyr Leu Val Cys Met Ser Phe Val Phe Asn Pro Gly Glu Gly Leu
50 55 60
Pro Gly Arg Ala Leu Ala Asp Gly Gln Thr Ile Trp Leu Cys Asn Ala
65 70 75 80
Gln Tyr Ala Asp Ser Lys Val Phe Ser Arg Ser Leu Leu Ala Lys Ser
85 90 95
Ala Ser Ile Gln Thr Val Val Cys Phe Pro Tyr Leu Gly Gly Val
100 105 110

<210> 815
<211> 107
<212> PRT
<213> Eucalyptus grandis

<400> 815
Met Glu Ser Glu Arg Tyr Asp Glu Thr Thr Glu Lys Gln Arg Ile Arg
1 5 10 15
Arg Arg Pro His Gln Lys Pro Tyr Arg Gly Ile Arg Met Arg Lys Trp
20 25 30
Gly Lys Trp Val Ala Glu Ile Arg Glu Pro Asn Lys Arg Ser Arg Ile
35 40 45
Trp Leu Gly Ser Tyr Ala Thr Ala Val Ala Ala Ala Arg Ala Tyr Asp
50 55 60
Thr Ala Val Phe Tyr Leu Arg Gly Pro Ser Ala Arg Leu Asn Phe Pro
65 70 75 80
Asp Leu Ile Leu His Glu Gly Gln Asp Ser Leu Gly Glu Val Ser Ala
85 90 95
Ala Ser Ile Arg Arg Arg Ala Ala Glu Val Gly
100 105

<210> 816
<211> 89
<212> PRT
<213> Eucalyptus grandis

<400> 816
Met Ala Phe Thr Gly Thr Val Asp Lys Cys Lys Val Cys Asp Lys Thr
1 5 10 15
Val His Val Val Asp Met Met Thr Leu Glu Gly Ile Pro Tyr His Lys
20 25 30
Thr Cys Phe Arg Cys Ser His Cys Asn Gly Thr Leu Val Met Ser Asn
35 40 45
Tyr Ser Ser Met Asp Gly Val Leu Tyr Cys Lys Thr His Phe Glu Gln
50 55 60
Leu Phe Lys Glu Ser Gly Asp Phe Arg Lys Asn Phe His Ser Ala Lys
65 70 75 80
Ser Asp Lys Pro Asn Glu Met Thr Arg
85

<210> 817
<211> 96
<212> PRT
<213> Eucalyptus grandis

<400> 817
Met Glu Ser Glu Arg Tyr Asp Glu Thr Thr Glu Gly Gln Arg Ile Lys
1 5 10 15
Arg Arg Pro His Gln Gln Gln Gln Gln Gln Gln Gln Arg Arg Gln Lys
20 25 30
Pro Tyr Arg Gly Ile Arg Met Arg Lys Trp Gly Lys Trp Val Ala Glu
35 40 45
Ile Arg Glu Pro Asn Lys Arg Ser Arg Ile Trp Leu Gly Ser Tyr Ala
50 55 60
Thr Pro Val Ala Ala Ala Arg Ala Tyr Asp Thr Ala Val Phe Tyr Leu
65 70 75 80
Arg Gly Pro Ser Ala Arg Leu Asn Phe Pro Asp Leu Ile Trp Arg Glu
85 90 95

<210> 818
<211> 159
<212> PRT
<213> Eucalyptus grandis

<400> 818
Met Val Lys Arg Asp Arg Glu Asp Ala Glu Val Glu Ala Leu Ala Val
1 5 10 15
Ala Asn Cys Leu Met Leu Leu Pro Arg Val Gly Glu Ser Ala Val Ser
20 25 30
Asn Arg Glu Ser Arg Ser Thr Glu Arg Met Phe Ala Cys Lys Thr Cys
35 40 45
Asn Arg Glu Phe Ser Ser Phe Gln Ala Leu Gly Gly His Arg Thr Ser
50 55 60
His Lys Lys Gln Lys Leu Ile Pro Gly Gly Leu Phe His Leu Gly Cys
65 70 75 80
Thr Ala Asp Ser Ser Pro Ala Lys Pro Lys Arg His Glu Cys Ser Ile
85 90 95
Cys Gly Leu Glu Phe Pro Met Gly Gln Ala Leu Gly Gly His Met Arg
100 105 110
Arg His Arg Ala Ala Met Ala Glu Gly Leu Ala Ala Glu Ala Ala Lys
115 120 125
Pro Val Pro Val Leu Lys Arg Ser Asn Ser Lys Arg Val Met Cys Leu
130 135 140
Asp Leu Asn Ser Ser Leu Met Glu Asp Asp Leu Thr Leu Arg Leu
145 150 155

<210> 819
<211> 241
<212> PRT
<213> Eucalyptus grandis

<400> 819
Glu Asp Ser Leu Asp Lys Glu Pro Pro Pro Pro Pro Pro Pro Arg Phe
1 5 10 15
Lys Val His Ser Phe Cys Lys Thr Leu Thr Ala Ser Asp Thr Ser Thr
20 25 30
His Gly Gly Phe Ser Val Leu Arg Arg His Ala Asp Glu Cys Leu Pro
35 40 45
Gln Leu Asp Met Ser Lys Gln Pro Pro Thr Gln Glu Leu Ala Ala Lys
50 55 60
Asp Leu His Gly Asn Glu Trp Arg Phe Arg His Ile Phe Arg Gly Gln
65 70 75 80
Pro Arg Arg His Leu Leu Gln Ser Gly Trp Ser Val Phe Val Ser Ser
85 90 95
Lys Arg Leu Val Ala Gly Asp Ala Phe Ile Phe Leu Arg Gly Glu Asn
100 105 110

Gly Glu Leu Arg Val Gly Val Arg Arg Ala Met Lys Gln Gln Gly Asn
115 120 125
Val Ser Pro Ser Val Ile Ser Ser His Ser Met His Leu Gly Val Leu
130 135 140
Ala Thr Ala Trp His Ala Ile Ser Thr Gly Thr Met Phe Thr Val Tyr
145 150 155 160
Tyr Lys Pro Arg Ile Ser Pro Ala Glu Phe Ile Ile Pro Tyr Asp Gln
165 170 175
Tyr Met Glu Ser Leu Lys Lys Asn Tyr Ser Ile Gly Met Arg Phe Lys
180 185 190
Met Arg Phe Glu Gly Glu Glu Ala Pro Glu Gln Arg Phe Thr Gly Thr
195 200 205
Ile Ile Gly Ile Glu Asp Ala Asp Pro Lys Gly Trp Arg Asp Thr Lys
210 215 220
Trp Arg Ser Leu Lys Val Arg Trp Asp Glu Asn Ser Ala Ile Pro Arg
225 230 235 240
Pro

<210> 820
<211> 185
<212> PRT
<213> Eucalyptus grandis

<400> 820
Phe Arg Gly Val Arg Lys Arg Lys Trp Gly Arg Trp Val Ser Glu Ile
1 5 10 15
Arg Leu Pro Asn Ser Arg Glu Arg Ile Trp Leu Gly Ser Tyr Asp Thr
20 25 30
Pro Glu Lys Ala Ala Arg Ala Phe Asp Ala Ala Ala Phe Cys Leu Gly
35 40 45
Arg Pro Ala Ala Lys Leu Asn Phe Pro Gly Ser Pro Pro Glu Ile Ser
50 55 60
Gly Ala Ala Ser Leu Ser Pro Asp Glu Ile Gln Ser Ala Ala Ala Ser
65 70 75 80
His Ala Asn Phe Gly Ala Val Ala Val Pro Ala Arg Ala Glu Leu Pro
85 90 95
Arg Pro Gly Ser Pro Ala Pro Ser Pro Ser Leu Ser Ala Ser Glu Ala
100 105 110
Ser Ser Val Leu Thr Thr Glu Ser Asp Leu Thr Leu Asp Leu Ser Phe
115 120 125
Leu Asp Phe Leu Asp Asp Ser Gly Pro Val Ser Gly Glu Pro His Ile
130 135 140
Gly Lys Phe Pro Gly Val Glu Glu Ala Pro Asp Val Phe Tyr His Met
145 150 155 160
Gln Phe Pro Ser Val Glu Ser Ala Gly Leu Asn Leu Asp Thr Leu Leu
165 170 175
Ala Ser Asp Ser Phe Pro Trp Arg Ile
180 185

<210> 821
<211> 187
<212> PRT
<213> Eucalyptus grandis

<400> 821
Glu Ala Asp Phe Leu Ala Lys His Ser Lys Pro Glu Ile Val Asp Met
1 5 10 15
Leu Arg Lys His Thr Tyr Arg Asp Glu Leu Glu Gln Ser Lys Arg Ser
20 25 30
Tyr Arg Gly Ser Ala Ala Glu Arg Ala Gly Arg Gly Gly Phe Gly Pro

```
        35                  40                  45
Gly Arg Thr Glu Trp Ser Ala Ala Ala Arg Glu Gln Leu Phe Glu Lys
    50                  55                  60
Ala Val Thr Pro Ser Asp Val Gly Lys Leu Asn Arg Leu Val Ile Pro
65                  70                  75                  80
Lys Gln His Ala Glu Lys His Phe Pro Leu Pro Gly Gly Pro Ala Ala
                85                  90                  95
Thr Met Lys Gly Val Leu Leu Asn Phe Glu Asp Val Gly Gly Lys Val
            100                 105                 110
Trp Arg Phe Arg Tyr Ser Tyr Trp Asn Ser Ser Gln Ser Tyr Val Leu
        115                 120                 125
Thr Lys Gly Trp Ser Arg Phe Val Lys Glu Lys Ser Leu Lys Ala Gly
    130                 135                 140
Asp Thr Val Cys Phe Gln Arg Ser Thr Gly Pro Asp Lys Gln Leu Tyr
145                 150                 155                 160
Ile Asp Phe Lys Pro Arg Gly Gln Pro Pro Ala Gly Pro Ala Ala Pro
                165                 170                 175
Pro Pro Pro Pro Val Gln Met Val Arg Leu Phe
            180                 185
```

<210> 822
<211> 110
<212> PRT
<213> Eucalyptus grandis

<400> 822

```
Val Asn Pro Pro Thr Arg Thr Phe Val Lys Val His Lys Ser Gly Thr
 1               5                  10                  15
Phe Gly Arg Ser Leu Asp Ile Ser Lys Phe Ser Ser Tyr Asp Glu Leu
            20                  25                  30
Arg Ser Glu Leu Ala Arg Met Phe Gly Leu Glu Gly Gln Leu Glu Asp
        35                  40                  45
Pro Gln Arg Ser Gly Trp Gln Leu Val Phe Val Asp Arg Glu Asn Asp
    50                  55                  60
Ile Leu Leu Leu Gly Asp Asp Pro Trp Gln Glu Phe Val Asn Asn Val
65                  70                  75                  80
Trp Tyr Ile Lys Ile Leu Ser Pro His Glu Val Lys Gln Leu Gly Lys
                85                  90                  95
Gln Gly Ile Asn Pro Ala Asn Ser Val Pro Arg Gln Ala Leu
            100                 105                 110
```

<210> 823
<211> 370
<212> PRT
<213> Eucalyptus grandis

<400> 823

```
Met Thr Arg Arg Cys Ser His Cys Cys Asn Lys Gly His Asn Ser Arg
 1               5                  10                  15
Thr Cys Pro Val Arg Gly Gly Gly Gly Asp Gly Gly Gly Ala Ala Ala
            20                  25                  30
Ala Pro Ser Ser Ser Ser Pro Ser Thr Ser Ser Ser Gly Ala Ala Ala
        35                  40                  45
Ala Ala Ala Ala Ser Ala Ser Gly Gly Gly Val Lys Leu Phe Gly Val
    50                  55                  60
Arg Leu Thr Asp Gly Ser Ile Met Lys Lys Ser Ala Ser Val Gly Cys
65                  70                  75                  80
Leu Ser Ala Ala His Tyr His Ser Ser Ser Ser Ala Ala Ala Ser Pro
                85                  90                  95
Asn Pro Gly Ser Ser Pro Ile Asp Gly Ser Asp Gly Tyr Leu Ser Asp
            100                 105                 110
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Asp Pro Ala Pro Gly Ser Arg Ser Ser Asn Arg Arg Val Glu Arg Lys
        115                 120                 125
Lys Gly Asn Pro Trp Thr Glu Glu Glu His Arg Arg Phe Leu Ile Gly
    130                 135                 140
Leu Gln Lys Leu Gly Lys Gly Asp Trp Arg Gly Ile Ala Arg Asp Phe
145                 150                 155                 160
Val Thr Thr Arg Thr Pro Thr Gln Val Ala Ser His Ala Gln Lys Tyr
                165                 170                 175
Tyr Ile Arg Gln Ser Asn Ala Gly Arg Arg Lys Arg Arg Ser Ser Leu
            180                 185                 190
Phe Asp Met Ala Pro Asp Met Ala Thr Ala Asp Gln Pro Ser His Pro
        195                 200                 205
Glu Glu Thr Phe Leu Pro Pro Leu Val Arg Leu Asn Asp Asp Thr Asn
    210                 215                 220
Ser Thr Thr Ser Thr Ser Met Gly Leu Asp Leu Glu Arg Thr Pro Met
225                 230                 235                 240
Glu Thr Ser His Pro Glu Thr Ser Glu Gly Gly Gly Asp Val Ala Met
                245                 250                 255
Glu Ser Ile Asp Gln Val Pro Leu Val Pro Cys Tyr Phe Pro Tyr Tyr
            260                 265                 270
Leu Pro Leu Pro Phe Pro Met Trp Pro Pro Asn Met Ala Pro Pro Glu
        275                 280                 285
Asp Gly Arg Val Val Glu Thr Ser His His Arg Val Leu Lys Pro Ile
    290                 295                 300
Pro Val Ile Pro Lys Glu Pro Leu Asn Ile Asp Gln Ile Val Gly Met
305                 310                 315                 320
Ser Gln Leu Ser Leu Ala Glu Asn Glu Pro Ala Pro Leu Ser Leu Lys
                325                 330                 335
Phe Leu Gly Glu Thr Ser Arg Gln Ser Ala Phe Ile Lys Ala Pro Ser
            340                 345                 350
Ser Val Asn Glu Ser Asp Leu Asp Asn Cys Lys Asp Gly Ala Thr Gln
        355                 360                 365
Ala Ala
    370

     <210> 824
     <211> 160
     <212> PRT
     <213> Eucalyptus grandis

     <400> 824
Glu Leu Trp Leu Ser Phe Gly Thr Gly Glu Lys Lys Ser Ile Asn Ser
1               5                   10                  15
Glu Leu Trp His Ala Cys Ala Gly Pro Leu Val Ser Leu Pro Pro Val
            20                  25                  30
Gly Ser Leu Val Val Tyr Phe Pro Gln Gly His Ser Glu Gln Val Ala
        35                  40                  45
Ala Ser Met Gln Lys Glu Thr Thr Cys Val Pro Ser Tyr Pro Asn Leu
    50                  55                  60
Pro Ala Lys Leu Ile Cys Met Leu His Asn Val Thr Leu His Ala Asp
65                  70                  75                  80
Leu Glu Thr Asp Glu Val Tyr Ala Gln Met Thr Leu Gln Pro Val Ser
                85                  90                  95
Lys Tyr Asp Gln Glu Ala Leu Leu Ala Ser Asp Met Gly Leu Lys Gln
            100                 105                 110
Ser Arg Gln Pro Thr Glu Phe Phe Cys Lys Thr Leu Thr Ala Ser Asp
        115                 120                 125
Thr Ser Thr His Gly Gly Phe Ser Val Pro Arg Arg Ala Ala Glu Lys
    130                 135                 140
Ile Phe Pro Ser Leu Asp Phe Thr Met Gln Pro Pro Cys Gln Glu Leu
145                 150                 155                 160
```

<210> 825
<211> 129
<212> PRT
<213> Eucalyptus grandis

<400> 825
Met Ala Leu Glu Ala Leu Asn Ser Pro Thr Ala Ala Ala Pro Phe Gly
1   5   10   15
His Asp Asp Ala Asp Gly His Pro Trp Ala Lys Arg Lys Arg Ser Lys
            20   25   30
Arg Pro Arg Ala Asp Pro Gln Asp Gln Pro Ser Glu Glu Glu Tyr Leu
        35   40   45
Ala Leu Cys Leu Ile Met Leu Ala Arg Arg Arg Arg Arg Pro Gly Ser
    50   55   60
Ser Gly Arg Leu His Glu Cys Ser Ile Cys His Lys Ala Phe Pro Thr
65   70   75   80
Gly Gln Ala Leu Gly Gly His Lys Arg Cys His Tyr Asp Gly Gly Ser
                85   90   95
Ser Ser Ser Ala Ala Arg Ala Ala Ser Ser Ser Glu Ala Gly Gly Pro
            100   105   110
Ser His Thr Thr Val Ser His Arg Glu Pro Ile Asp Leu Asn Leu Pro
        115   120   125
Ala

<210> 826
<211> 115
<212> PRT
<213> Eucalyptus grandis

<400> 826
Arg His Leu Leu Gln Ser Gly Trp Ser Leu Phe Val Ser Ser Lys Lys
1   5   10   15
Leu Val Ala Gly Asp Ala Phe Ile Tyr Leu Arg Gly Glu Asn Gly Glu
            20   25   30
Leu Arg Val Gly Val Arg Arg Ala Met Arg Gln Leu Asn Asn Val Pro
        35   40   45
Ser Ser Ile Met Pro Ser His Ser Met His Ile Gly Val Leu Ala Thr
    50   55   60
Ala Trp His Ala Ile Ser Thr Gly Thr Met Phe Thr Val Tyr Tyr Lys
65   70   75   80
Pro Arg Thr Ser Pro Ala Glu Phe Ile Ile Pro Phe Asp Lys His Ile
                85   90   95
Glu Ser Ala Lys Phe Asp Tyr Ser Ile Gly Met Arg Phe Arg Met Thr
            100   105   110
Phe Glu Trp
        115

<210> 827
<211> 199
<212> PRT
<213> Eucalyptus grandis

<400> 827
Ser Ser Val His Asp Ile Ser Glu Asn Gly Glu Ala Asp Glu Gln Gln
1   5   10   15
Lys His Ser Glu Gln His Glu Ser Ser Pro Ala Thr Gly Val Pro His
            20   25   30
Pro Gly Val Ser Leu Pro Asn Val Gln Tyr Ala Thr Pro Pro Gln Leu
        35   40   45

Gly Ala Gly His Ala Met Thr Pro Pro Ala Tyr Pro Tyr Pro Asp Pro
50 55 60
Tyr Tyr Arg Ser Ile Phe Ala Pro Tyr Asp Ala Gln Ser Tyr Pro Gln
65 70 75 80
Gln Pro Tyr Gly Ala Gln Pro Met Val His Leu Gln Leu Met Gly Ile
85 90 95
Gln Gln Ala Gly Val Pro Leu Pro Ser Asp Ala Val Glu Glu Pro Val
100 105 110
Phe Val Asn Ala Lys Gln Tyr His Gly Ile Leu Arg Arg Arg Gln Ser
115 120 125
Arg Ala Lys Ala Glu Leu Glu Asn Lys Ala Leu Lys Ser Arg Lys Pro
130 135 140
Tyr Leu His Glu Ser Arg His Leu His Ala Leu Arg Arg Ala Arg Gly
145 150 155 160
Cys Gly Gly Arg Phe Leu Asn Ala Lys Lys Asp Glu Asn Gln Gln Ser
165 170 175
Glu Val Ser Ser Ala Asp Lys Ser Gln Gly Asn Ile Asn Leu Asn Ser
180 185 190
Asp Lys Ser Asp Arg Ser Ser
195

<210> 828
<211> 98
<212> PRT
<213> Eucalyptus grandis

<400> 828
Val Lys Asp Met Phe Gln Asp Gln Arg Glu Lys Tyr Asp Thr Phe Leu
1 5 10 15
Glu Val Met Lys Asp Phe Lys Ala Gln Arg Thr Asp Thr Thr Gly Val
20 25 30
Ile Ala Arg Val Lys Glu Leu Phe Lys Gly His Asn Lys Leu Ile Leu
35 40 45
Gly Phe Asn Thr Phe Leu Pro Lys Gly Phe Glu Ile Ser Pro Asp Glu
50 55 60
Asp Glu Thr Pro Ile Lys Lys Asn Val Glu Phe Glu Glu Ala Ile Ser
65 70 75 80
Phe Val Asn Lys Ile Lys Lys Arg Phe Gln Asn Asp Glu His Val Tyr
85 90 95
Lys Ser

<210> 829
<211> 136
<212> PRT
<213> Eucalyptus grandis

<400> 829
Met Phe Arg Gln His Asn Leu Leu Leu Asn Phe Asn Pro Thr Asp Asp
1 5 10 15
Asp Pro Gln Asp Glu Gly Ser Pro Pro Pro Pro Tyr Val Leu Arg Gly
20 25 30
Ala Pro Pro Pro Ala Glu Pro Ser Pro Ala Glu Lys Glu Pro Met Phe
35 40 45
Glu Lys Pro Leu Thr Pro Ser Asp Val Gly Lys Leu Asn Arg Leu Val
50 55 60
Ile Pro Lys Gln His Ala Glu Lys His Phe Pro Leu Val Gly Glu Ala
65 70 75 80
Thr Gln Gln Leu Ser Phe Glu Asp Glu Ser Gly Lys Trp Trp Arg Phe
85 90 95
Arg Tyr Ser Tyr Trp Ser Ser Ser Gln Ser Tyr Val Leu Thr Lys Gly

```
            100                     105                     110
Trp Ser Arg Phe Val Lys Asp Lys Arg Leu Asp Ala Gly Asp Val Val
        115                 120                     125
Leu Phe Thr Ala Thr Ala Pro Thr
    130                 135

      <210> 830
      <211> 96
      <212> PRT
      <213> Eucalyptus grandis

      <400> 830
Met Ala Gln Arg Ser Ala Pro Ala Pro Phe Leu Thr Lys Thr Tyr Gln
 1               5                  10                  15
Leu Val Asp Asp Pro Ala Thr Asp Asp Val Ile Ser Trp Gly Glu Ser
            20                  25                  30
Gly Arg Thr Phe Val Val Trp Lys Thr Ala Glu Phe Ala Lys Asp Leu
        35                  40                  45
Leu Pro Ser Ser Phe Lys His Asn Asn Phe Ser Ser Phe Val Arg Gln
    50                  55                  60
Leu Asn Thr Tyr Gly Phe Arg Lys Ile Val Pro Asp Lys Trp Glu Phe
65                  70                  75                  80
Ala Asn Asp Arg Phe Gln Arg Gly Gln Lys Glu Leu Leu Ser Glu Ile
                85                  90                  95

      <210> 831
      <211> 81
      <212> PRT
      <213> Eucalyptus grandis

      <400> 831
Arg Met Trp Arg Asp Lys Met Arg Leu Lys Arg Leu Lys Glu Gln Asn
 1               5                  10                  15
Lys Gly Lys Glu Gly Val Asp Ile Ala Lys Gln Arg Gln Ser Gln Glu
            20                  25                  30
Gln Ala Arg Arg Lys Lys Met Ser Arg Ala Gln Asp Gly Ile Leu Lys
        35                  40                  45
Tyr Met Leu Lys Met Met Val Ala His Trp Lys Arg Gly Leu Val Ala
    50                  55                  60
Pro Ala Gly Phe Ala Glu Gly Ser Arg Ser Pro Ala Leu Gln Glu Thr
65                  70                  75                  80
Ser

      <210> 832
      <211> 94
      <212> PRT
      <213> Eucalyptus grandis

      <400> 832
Met Asp Gln Trp Arg Thr Asp Leu Gly Ala Ser Thr Ser Val His Pro
 1               5                  10                  15
Gln Gln His Gln His Gln His Gln His His Pro Ser Ser Arg Leu His
            20                  25                  30
Ala Ser His Asp Glu Pro Arg Gln Arg Glu Glu Ala Asp Val Arg Asp
        35                  40                  45
Pro Val Ala Ala Arg Lys Val Gln Lys Ala Asp Arg Glu Lys Leu Arg
    50                  55                  60
Arg Asp Arg Leu Asn Glu His Phe Leu Glu Leu Gly Ser Thr Leu Asp
65                  70                  75                  80
Pro Asp Arg Pro Lys Asn Asp Lys Ala Thr Ile Leu Thr Asp
```

85 90

<210> 833
<211> 245
<212> PRT
<213> Eucalyptus grandis

<400> 833
Lys Lys Thr Ile Ser Ser Glu His Lys Arg Arg Arg Val Val Val Val
1 5 10 15
Val Leu Leu Leu Leu Val Pro Ser Thr Ser Phe Phe Pro Pro Pro Ser
20 25 30
Ser Ser Leu Pro Pro Ser Leu Ser Leu Asn Leu Pro Asn Pro Ser Arg
35 40 45
Arg Arg Arg Arg Glu Arg Glu Arg Glu Arg Glu Arg Arg Glu Asp His
50 55 60
Arg Phe Arg Pro Ser Arg Ala Arg Ala Val Met Arg Arg Gly Arg Cys
65 70 75 80
Ala Ala Ala Ala Ala Lys Arg Glu Ala Ala Glu Ile Ala Pro Pro Pro
85 90 95
Val Pro His Ala Ala Ala Ala Ala Ala Ala Glu Pro Arg Tyr Arg Gly
100 105 110
Val Arg Arg Lys Ser Leu Gly Arg Tyr Thr Ala Glu Ile Arg Asp Pro
115 120 125
Gly Thr Lys Lys Leu Val Arg Leu Gly Thr Phe Gly Ser Pro Glu Glu
130 135 140
Ala Ala Arg Ala Phe Asp Ala Lys Ala Val Ala Phe Arg Gly Val Lys
145 150 155 160
Ala Arg Thr Asn Phe Pro Val Ala Pro Ser Ser Phe Pro Pro Ala Ala
165 170 175
Ser Arg Asp Leu Arg Ala Pro Leu Ile Glu Ser Arg Lys Phe Gly Arg
180 185 190
Arg Gly Ala Arg Asp Leu Arg Gly Asp His His Asp Val Ser Pro Gln
195 200 205
Arg Pro Thr Ser Ser Ser Leu Ser Ser Thr Val Val Ser Ser Ser Gly
210 215 220
Pro Arg Pro Ser Pro Ser Pro Glu Thr Ala Lys Arg Arg Thr Arg Thr
225 230 235 240
Pro Pro Arg His Arg
245

<210> 834
<211> 180
<212> PRT
<213> Eucalyptus grandis

<400> 834
Tyr Asn Ser Asn Ser Asp Pro Ile Arg Glu Glu Phe Met Lys Ala Leu
1 5 10 15
Glu Pro Phe Met Lys Ser Val Ser Pro Val Ser Ser Pro Leu Ser Ser
20 25 30
Leu Ser Ser Cys Asp Ser Val Phe Pro Lys Gln Gln Pro Asn Leu Asn
35 40 45
Pro Asp Leu Cys Ser Ser Trp Ile Val Asn Pro Met Gly Leu Glu Gln
50 55 60
Ser Gly Ser Ile Gly Leu Asn Arg Leu Ser His Ser Gln Ile Gln His
65 70 75 80
Ile Gln Asp Glu Met Leu Leu Arg Arg Gln Asn Gln Glu Leu Trp Leu
85 90 95
Ala Ser Ala Val Lys Ser Pro Leu Gln His Glu Lys Phe Asp Gln Cys
100 105 110

Arg Tyr Gln Asn His His Gly Ser Pro His Leu Leu Arg Pro Lys Ala
115 120 125
Leu Ser Met Lys Arg Val Gly Val Pro Pro Lys Pro Asn Lys Leu Tyr
130 135 140
Arg Gly Val Arg Gln Arg His Trp Gly Lys Trp Val Ala Glu Ile Arg
145 150 155 160
Leu Pro Lys Asn Arg Thr Arg Leu Trp Leu Gly Thr Phe Asp Thr Ala
165 170 175
Glu Glu Ala Ala
180

<210> 835
<211> 234
<212> PRT
<213> Eucalyptus grandis

<400> 835
Arg Glu Arg Glu Arg Gly Arg Gly Val Met Asp Leu Phe Phe His Glu
1 5 10 15
Glu Val Gln Ser Asp Ile Phe Trp Cys Asp Gln Leu Val Glu Pro Pro
20 25 30
Pro Pro Pro Pro Pro Pro Leu Pro Pro Ala Asn Pro Ser Ala Phe Ser
35 40 45
Pro Tyr Thr Asn Arg Leu Pro Ser Gln Asp Arg Gly Phe Met Pro Asn
50 55 60
Pro Gly Asn Asn Met Asn Lys Arg Val Met Glu Phe Leu Arg Arg Ser
65 70 75 80
Trp Ala Glu Pro Ser Gln Ile Gln Glu Phe Asp Arg Glu Arg Gly Phe
85 90 95
Arg His Met Leu Ser Glu Arg Met Arg Arg Glu Lys Gln Lys Arg Ser
100 105 110
Tyr Ser Ala Leu Leu Ser Glu Leu Pro His Gly Thr Lys Asn Asp Lys
115 120 125
Asn Ser Ile Val Gln Thr Ala Cys Met Arg Ile Lys Glu Leu Val Lys
130 135 140
Tyr Lys Gln Glu Leu Glu Arg Gln Asn Gly Glu Leu Lys Ser Gly Leu
145 150 155 160
Asn Glu Lys Ser Gly Gly Asp Lys Ala Glu Gly Thr Lys Ile Arg Val
165 170 175
Lys Ile Ala Asn Pro Thr Ser Gly Ile Asp Ser Met Leu Glu Val Leu
180 185 190
Lys Cys Leu Asp Asn Met Gly Leu Lys Ala Thr Ala Ile Gln Thr Gln
195 200 205
Cys Ser Ala Asp Gln Leu Phe Ala Val Ile Glu Val Glu Asn Glu Val
210 215 220
Cys Ala Gln Gln Ser Asp Ala Asn Val His
225 230

<210> 836
<211> 59
<212> PRT
<213> Eucalyptus grandis

<400> 836
His Gly Ala Thr Trp Arg Arg Lys Glu Ala Asn Gly Gly Ser Glu Ala
1 5 10 15
Ser Asp Ala Val Leu Pro Arg Ala His His Arg His Arg Tyr Lys Gly
20 25 30
Val Arg Met Arg Lys Trp Gly Lys Trp Val Ala Glu Ile Arg Gln Pro
35 40 45
Asn Ser Arg Asp Arg Ile Trp Leu Gly Ser Tyr

50 55

<210> 837
<211> 38
<212> PRT
<213> Eucalyptus grandis

<400> 837
Glu Leu Leu Gln Ile Gln Arg Lys Arg Lys Arg Met Glu Ser Asn Arg
1 5 10 15
Glu Ser Ala Lys Arg Ser Arg Leu Arg Lys Gln Gln His Leu Asp Glu
20 25 30
Leu Thr Thr Glu Val Gly
35

<210> 838
<211> 167
<212> PRT
<213> Eucalyptus grandis

<400> 838
Met Ala Pro Arg Glu Lys Pro Ser Val Ala Ala Ile Pro Asn Pro Asn
1 5 10 15
Gly Ala Lys Glu Ile Arg Phe Arg Gly Val Arg Lys Arg Pro Trp Gly
20 25 30
Arg Tyr Ala Ala Glu Ile Arg Asp Pro Gly Lys Lys Thr Arg Val Trp
35 40 45
Leu Gly Thr Phe Asp Thr Ala Glu Glu Ala Ala Arg Ala Tyr Asp Thr
50 55 60
Ala Ala Arg Glu Phe Arg Gly Ala Lys Ala Lys Thr Asn Phe Pro Thr
65 70 75 80
Ser Ala Glu Leu Ile Ser Ser Ser Arg Ser Pro Ser Gln Ser Ser Ser
85 90 95
Leu Asp Glu Pro Ser Pro Pro Pro Pro Ala Gly Ala Val Gln Ala Ala
100 105 110
Ala Leu Gly Pro Pro Leu Asp Leu Ser Leu Gly Arg His Pro Val Ala
115 120 125
Ala Ala Ala Ala Gly Pro Gly Pro Tyr Phe Pro Gly Ala Ala Ala Met
130 135 140
Cys Phe Pro Val Met Pro Pro Pro Pro Arg Pro Val Phe Phe Phe Asp
145 150 155 160
Pro Phe Gly Arg Met Glu His
165

<210> 839
<211> 84
<212> PRT
<213> Eucalyptus grandis

<400> 839
Cys Leu Gly Leu Ser Ser Val Ala Ala Asn Ala Glu Lys Leu Ala Ala
1 5 10 15
Leu Gln Asn Glu Tyr His Phe Ala Lys Ala Arg Ile Asp Glu Asp His
20 25 30
Glu Lys Ala Gln Arg Leu Glu Lys Lys Val Lys Thr Leu Thr Phe Gly
35 40 45
Tyr Gln Met Arg Glu Lys Thr Leu Arg Asp Gln Ile Glu Ser Thr Phe
50 55 60
Lys Gln Leu Asp Thr Ala Gly Thr Glu Leu Glu Cys Phe Pro Ala Leu
65 70 75 80
Gln Lys Gln Glu

<210> 840
<211> 157
<212> PRT
<213> Eucalyptus grandis

<400> 840
Pro Ser Ser Pro Val Ser Thr Lys Thr His Pro Pro Tyr Leu Cys Thr
1 5 10 15
Arg Pro Thr Arg Leu Ser Gln Gly Leu Arg Tyr Arg Arg Leu Ala Ala
20 25 30
Lys His Glu Glu Lys Pro Ser Ala Val Leu Asp Lys Ser Gln Asp Pro
35 40 45
Thr Asp Ser Ala Lys Pro Ser Lys Lys Pro Arg His Arg His Ser Pro
50 55 60
Thr Gln Leu Ala Ala Leu Asn Glu Leu Phe Glu Lys Ser Glu His Pro
65 70 75 80
Thr Leu Glu Glu Arg Gly Gln Leu Ala Glu Lys Leu Gly Met Glu Thr
85 90 95
Lys Thr Val Asn Ala Trp Phe Gln Asn Lys Arg Ala Ser Thr Lys Lys
100 105 110
Arg Asn Lys Gly Gly Thr Ser Glu Pro His Pro Ala Thr Ser Gln Asn
115 120 125
Asp Leu Ser Glu Asp Ala Leu Lys Thr Pro Ser Ala Leu Pro Ser Ile
130 135 140
Ala Asn Leu Leu Asn Asp Ala Pro Ser Ser Ala Ser Pro
145 150 155

<210> 841
<211> 86
<212> PRT
<213> Eucalyptus grandis

<400> 841
Tyr Leu His Asn Pro Met Arg Lys Arg Gln Arg Thr Leu Asp Met His
1 5 10 15
Ala Gly Ala Pro Gly Pro Asn Asp Ala Ile Asp Ala Asn Ser Val Gly
20 25 30
Asp Asn Ala Phe Ile Ala Asp His Asp Ala Ile Asp Ser Ala Gly Asp
35 40 45
Asp Asp Asp Asp Glu Asp Lys Pro Lys Thr Gly Gln Lys Gln Gly Arg
50 55 60
Arg Lys Ile Lys Ile Glu Phe Ile Gln Asp Lys Ser Arg Arg His Ile
65 70 75 80
Thr Phe Ser Lys Arg Lys
85

<210> 842
<211> 201
<212> PRT
<213> Eucalyptus grandis

<400> 842
Asp His Val Pro Ser Ser Ser Ala Leu Asp Ser Arg Ser Ser Ser Asn
1 5 10 15
Arg Thr Ser Gly Val Thr Leu Ala Glu Val Leu Pro Thr Pro Gly Gln
20 25 30
Ser Lys Ser Ser Ala Asp Ser Gly Phe Cys Val Ser His Leu Gly Gly
35 40 45
Val Pro Asp Ser Gln Ser Ser Ser Tyr Ala Ala Glu His Val Asn Thr

```
    50                  55                  60
His Gln Thr Gln Glu Ile His Leu Pro Val Pro Gln Asp Asn Ala Asp
65                  70                  75                  80
Leu Pro Asp Ala Asn Phe Leu Val Ser Glu Thr Ala Ser Pro Asp Tyr
                85                  90                  95
Leu Glu Thr Leu Ser Ala Ala Leu Asp Gly Thr Met Asp Val Glu Ser
            100                 105                 110
Asp Ala Phe Ser Ser Glu Arg Asp Ala Gly Ile Met Leu Asp Asp Val
        115                 120                 125
Thr Asn Leu Pro Ala Ile Ser Asp Val Phe Trp Glu Gln Phe Leu Ala
    130                 135                 140
Ala Ser Pro Leu Thr Ala Asp Thr Glu Glu Ile Ser Ser Thr Ser His
145                 150                 155                 160
Glu Thr Gly Ile Thr Asn Asp Gln Glu Ser His Thr Lys Val Glu Asn
                165                 170                 175
Gly Phe Glu Lys Ala His Tyr Met Asp His Leu Thr Lys Gln Met Gly
            180                 185                 190
His Leu Thr Ser Asn Asn Gly Thr Gly
        195                 200

      <210> 843
      <211> 187
      <212> PRT
      <213> Eucalyptus grandis

      <400> 843
Phe Ser Thr Pro Pro Pro His Pro Glu Ser Asn Pro Ile Pro Ser Leu
 1               5                  10                  15
Pro Pro Ser Leu Phe Phe Pro Gln Ser Phe Val Ala Phe Ser Ser Thr
            20                  25                  30
His Ala Pro Gln Ser Pro Thr Pro Ser Ile Lys Leu Lys His His His
        35                  40                  45
Leu Lys Lys Lys Glu Gly Lys Lys Glu Arg Arg Thr Gly Asp Pro Thr
    50                  55                  60
Glu Gly Arg Ala Arg Thr Arg His Gly Thr Ile Pro Leu Leu Arg Glu
65                  70                  75                  80
Gly Ala His Gln Gln Gly Arg Val Asp Gln Gly Arg Gly Pro Ala Pro
                85                  90                  95
His Arg Leu His Pro Pro Pro Arg Arg Arg Leu Leu Ala Leu Pro Pro
            100                 105                 110
Gln Ile Cys Arg Ala Ser Gln Val Arg Gln Glu Leu Gln Ala Gln Val
        115                 120                 125
Asp Lys Leu Pro Pro Pro Arg Pro Gln Arg Gly Asn Phe Thr Glu Glu
    130                 135                 140
Glu Asp Glu Leu Ile Ile Lys Leu His Ser Leu Leu Gly Asn Lys Trp
145                 150                 155                 160
Ser Leu Ile Ala Gly Arg Leu Pro Gly Arg Thr Asp Asn Glu Ile Lys
                165                 170                 175
Asn Tyr Trp Asn Thr His Ile Lys Arg Lys Ala
            180                 185

      <210> 844
      <211> 112
      <212> PRT
      <213> Eucalyptus grandis

      <400> 844
Met Glu Met Lys Gly Gly Val Val Pro Lys Glu Glu Glu Ala Ser Ser
 1               5                  10                  15
Asp Val Gly Gln Pro Pro Pro Pro Pro Pro Pro Pro Pro Gln Pro Met
            20                  25                  30
```

Glu Gly Leu Gly Glu Ala Glu Ala Ala Pro Phe Leu Thr Lys Thr Phe
35 40 45
Glu Ile Val Glu Asp Pro Ala Thr Asp Pro Ile Val Ser Trp Ser Glu
50 55 60
Gly Arg Asn Ser Phe Ile Val Trp Asp Ala His Gln Phe Ala Val Thr
65 70 75 80
Leu Leu Pro Lys His Phe Lys His Gly Asn Phe Ser Ser Phe Ile Arg
85 90 95
Gln Leu Asn Thr Tyr Gly Val Phe Asp Glu Tyr Asp Thr Ala Ser Phe
100 105 110

<210> 845
<211> 76
<212> PRT
<213> Eucalyptus grandis

<400> 845
Met Thr Gly Asn Phe Gly Trp Gly Ser Asn Ser Met Glu Glu Ala Trp
1 5 10 15
Arg Lys Gly Pro Trp Thr Ala Glu Glu Asp Lys Leu Leu Ile Glu Tyr
20 25 30
Val Lys Leu His Gly Glu Gly Arg Trp Asn Ser Val Ala Arg Leu Thr
35 40 45
Gly Leu Lys Arg Asn Gly Lys Ser Cys Arg Leu Arg Trp Val Asn Tyr
50 55 60
Leu Arg Pro Asp Leu Lys Arg Gly Gln Ile Thr Pro
65 70 75

<210> 846
<211> 142
<212> PRT
<213> Eucalyptus grandis

<400> 846
Met Asn Ser Asn Ala Ser Ser Asn Pro Gln Ser Met Ala Thr Ser Thr
1 5 10 15
Thr Ser Ala Thr Thr Pro Ala Ala Gly Gly Asp Gly Gly Lys Lys Val
20 25 30
Arg Lys Pro Tyr Thr Ile Thr Lys Ser Arg Glu Ser Trp Thr Glu Glu
35 40 45
Glu His Asp Lys Phe Leu Glu Ala Leu Gln Leu Phe Asp Arg Asp Trp
50 55 60
Lys Lys Ile Glu Asp Phe Val Gly Ser Lys Thr Val Ile Gln Ile Arg
65 70 75 80
Ser His Ala Gln Lys Tyr Phe Leu Lys Val Gln Lys Asn Gly Ala Val
85 90 95
Ala His Val Pro Pro Pro Arg Pro Lys Arg Lys Ala Ala His Pro Tyr
100 105 110
Pro Gln Lys Ala Ser Lys Asn Val Leu Val Pro Leu Gln Ala Ser Met
115 120 125
Ala Gln Pro Ser Ser Thr Asn Pro Ala Phe Thr Ile Thr Pro
130 135 140

<210> 847
<211> 84
<212> PRT
<213> Eucalyptus grandis

<400> 847
Met Lys Met Ala Glu Arg Ser Asn Ser Ser Asp Pro Glu Thr Ser Pro
1 5 10 15

Ser Asn Ser Pro Ser Thr Ser Ser Ser Ser Ser Ser Tyr Ser Pro Asp
20 25 30
Pro Arg Arg Arg Ala Gly Ser Pro Ala Ala Ala Arg Asp Pro Leu Arg
35 40 45
Ser Ser Lys Arg Ser Lys His Pro Val Tyr Arg Gly Val Arg Met Arg
50 55 60
Asn Trp Gly Lys Trp Val Ser Glu Ile Arg Glu Pro Arg Lys Lys Ser
65 70 75 80
Arg Ile Trp Leu

<210> 848
<211> 60
<212> PRT
<213> Eucalyptus grandis

<400> 848
Lys Trp Arg Ser Arg Phe Arg Met Ala Gly Phe Gln Gln Phe Pro Leu
1 5 10 15
Ser Ser Ala Val Thr Asp Ala Val Arg Asn Leu Leu Arg Glu Tyr Asn
20 25 30
Glu Asn Tyr Arg Ile Glu Glu Lys Asp Gly Ala Leu Tyr Leu Trp Trp
35 40 45
Arg Asn Arg Ala Met Ala Thr Ser Ser Ala Trp Trp
50 55 60

<210> 849
<211> 90
<212> PRT
<213> Eucalyptus grandis

<400> 849
Gly Val Gly Phe Pro Asp Pro Gly Pro Asp Asn Gly Gln Val Leu Asp
1 5 10 15
Ala Arg Asp Pro Leu Ala Glu Lys Lys Leu Glu Leu Ala Thr Cys Gln
20 25 30
Arg Arg Val Glu Glu Glu Met Leu Lys His Ser Lys Ala Val Glu Val
35 40 45
Thr Arg Thr Ser Thr Leu Asn Asn Leu Gln Thr Gly Leu Pro Gly Val
50 55 60
Phe Gln Ala Leu Ala Ser Phe Ser Ser Leu Phe Met Glu Val Leu Asp
65 70 75 80
Thr Val Cys Thr Arg Ser Tyr Ala Ile Lys
85 90

<210> 850
<211> 52
<212> PRT
<213> Eucalyptus grandis

<400> 850
Met Ala Ala Pro Pro Ala Glu Gln Ser Gly Ser Ala Ser Gly Gly Glu
1 5 10 15
Ser Gln Arg Ser Val Pro Thr Pro Phe Leu Thr Lys Thr Tyr Gln Leu
20 25 30
Val Asp Asp Pro Ala Ile Asp Ala Val Ile Ser Trp Asn Gly Asp Gly
35 40 45
Ser Ser Phe Ile
50

<210> 851

<211> 52
<212> PRT
<213> Eucalyptus grandis

<400> 851
Met Asp Pro Met Asp Ile Val Gly Lys Ser Lys Glu Asp Ala Ser Leu
1 5 10 15
Pro Lys Ala Thr Met Thr Lys Ile Ile Lys Glu Met Leu Pro Pro Asp
20 25 30
Val Arg Val Ala Arg Asp Ala Gln Asp Leu Leu Ile Glu Cys Cys Val
35 40 45
Glu Phe Ile Asn
50

<210> 852
<211> 121
<212> PRT
<213> Eucalyptus grandis

<400> 852
Met Asn Ser Pro Leu Ala Gln Leu Val Asn Pro Arg Arg Met His Thr
1 5 10 15
Tyr Glu Pro Phe Asp Gln Phe Pro Met Trp Gly Asp Thr Phe Lys Ala
20 25 30
Asp Lys Val Lys Asn Leu Glu Ala Ser Ser Ser Val Ile Val His Ala
35 40 45
Val Asp Asp Gly Leu Asp Lys Lys Phe Glu Tyr Val Ser His Glu Ser
50 55 60
Ala Glu Asn Ser Ser Ser Arg Ser Asp Gln Glu Ala Asn Arg Pro Asp
65 70 75 80
Lys Val Gln Arg Arg Leu Ala Gln Asn Arg Glu Ala Ala Arg Lys Ser
85 90 95
Arg Leu Arg Lys Lys Lys Tyr Val Gln Gln Leu Glu Ser Ser Arg Leu
100 105 110
Lys Leu Ala Gln Leu Glu Leu Glu Leu
115 120

<210> 853
<211> 293
<212> PRT
<213> Eucalyptus grandis

<400> 853
Phe Val Tyr Gly Ile Ile Pro Glu Lys Gly Lys Pro Val Ser Gly Ala
1 5 10 15
Ser Asp Asn Leu Arg Ala Trp Trp Lys Glu Lys Val Arg Phe Asp Arg
20 25 30
Asn Gly Pro Ala Ala Ile Ala Lys Tyr Arg Ala Asp His Ser Ile Pro
35 40 45
Gly Asn Gly Glu Asp Ala Ala Thr Ile Gly Pro Ile Pro His Thr Leu
50 55 60
Gln Glu Leu Gln Asp Thr Thr Leu Gly Ser Leu Leu Ser Ala Leu Met
65 70 75 80
Gln His Cys Asn Pro Pro Gln Arg Arg Phe Pro Leu Glu Lys Gly Val
85 90 95
Ala Pro Pro Trp Trp Pro Thr Gly Glu Glu Glu Trp Trp Pro Gln Leu
100 105 110
Gly Leu Pro Ala Asp Gln Gly Pro Pro Pro Tyr Lys Lys Pro His Asp
115 120 125
Leu Lys Lys Ala Trp Lys Val Ser Val Leu Thr Ala Val Ile Lys His
130 135 140

```
Met Ser Pro Asp Ile Ser Lys Ile Arg Lys Leu Val Arg Gln Ser Lys
145                 150                 155                 160
Cys Leu Gln Asp Lys Met Thr Ala Lys Glu Ser Ala Thr Trp Leu Ala
                165                 170                 175
Ile Ile Asn Gln Glu Glu Ala Leu Ser Arg Lys Leu Tyr Pro Asn Ser
            180                 185                 190
Phe Pro Pro Val Cys Ser Asp Ser Gly Phe Gly Ser Tyr Val Ile Ser
        195                 200                 205
Asp Ala Ser Asp Tyr Asp Val Glu Gly Ala Asp Asp Glu Pro Lys Phe
    210                 215                 220
Glu Ala Glu Glu Cys Lys Pro Phe Asp Pro Ser Ala Phe Gly Ile Gly
225                 230                 235                 240
Pro Arg Val Ser Thr Gly Glu Leu Leu Ile His Pro Leu Val Ser Gln
                245                 250                 255
Ile Lys Gly Glu Val Asn Glu Thr Lys Thr Asn Ser Arg Leu Val Ser
            260                 265                 270
Lys Arg Asn Gln Pro Ser Asp Glu Pro Lys Ala Lys Met Asp Gln Lys
        275                 280                 285
Ile Tyr Thr Cys Glu
    290

      <210> 854
      <211> 150
      <212> PRT
      <213> Eucalyptus grandis

      <400> 854
Ser Thr Ser Ser Gln Arg Ala Asp Lys Ser Leu Ile Met Glu His Glu
 1               5                  10                  15
Phe Ser Ser Ala Lys Ile Lys Ala Leu Leu Glu Ile Leu Gln Ser Gln
            20                  25                  30
Cys Arg Gly Glu Ser Ala Asn Ala Glu Leu His Gly Pro Met Gly Cys
        35                  40                  45
Asp Asp Glu Ser Leu Phe Glu Asn Thr Gly Thr Gly Asp Ser Thr Tyr
    50                  55                  60
Arg Val Lys Ala Val Lys His Thr Thr Val Tyr Ser Ser Ser Pro Pro
65                  70                  75                  80
Glu Gly Pro Ile Lys Ala Ile Val Phe Ser Gln Trp Thr Ser Met Leu
                85                  90                  95
Asn Leu Val Glu Gln Asn Leu Ile His Phe Gly Ile Asn Tyr Arg Arg
            100                 105                 110
Leu Asp Gly Thr Met Thr Leu Ser Ala Arg Asp Lys Ala Val Lys Asp
        115                 120                 125
Phe Asn Thr Asp Pro Glu Ile Val Val Met Leu Met Ser Leu Lys Ala
    130                 135                 140
Gly Asn Leu Gly Leu Asn
145                 150

      <210> 855
      <211> 92
      <212> PRT
      <213> Eucalyptus grandis

      <400> 855
Ser Glu Phe Gly Gly Glu Leu Met Asn Pro Arg Ser Asn Trp Leu Ile
 1               5                  10                  15
Val Tyr Asn Asp Asp Glu Gly Asp Met Met Leu Val Gly Asp Asp Pro
            20                  25                  30
Trp Gln Glu Phe Cys Gly Ile Val Arg Lys Ile Phe Ile Tyr Thr Arg
        35                  40                  45
Glu Glu Val Gln Lys Met Lys Pro Gly Thr Ile Ser Ala Lys Asp Glu
```

```
    50                  55                  60
Asp Asn Leu Met Val Asp Glu Gly Val Phe Ser Lys Lys Met Thr Ser
65                  70                  75                  80
Asp Thr Leu Pro Ser Ala Ser Asp Pro Lys Asn Cys
                85                  90
```

<210> 856
<211> 74
<212> PRT
<213> Eucalyptus grandis

<400> 856

```
Ile Glu Ala Leu Lys Lys Arg Leu Asp Asp Val Asn Ala Lys Tyr Ala
 1               5                  10                  15
Val Ser Val Glu Phe Thr Lys Ala Met Ala Leu Asn His Leu Lys Asn
            20                  25                  30
Gly Leu Pro Arg Val Phe Lys Ala Leu Met Glu Phe Ser Gly Ala Cys
        35                  40                  45
Thr Lys Val Phe Glu Ala Leu Asn Asn Pro Arg Glu Gln Val Gly Ser
    50                  55                  60
Arg Glu Asn Glu Pro Arg Val Leu Pro Ala
65                  70
```

<210> 857
<211> 125
<212> PRT
<213> Eucalyptus grandis

<400> 857

```
Gln Ile Leu Pro Pro Asn Ala Lys Ile Ser Lys Glu Ala Lys Glu Thr
 1               5                  10                  15
Met Gln Glu Cys Val Ser Glu Phe Ile Ser Phe Val Thr Gly Glu Ala
            20                  25                  30
Ser Asp Lys Cys His Lys Glu Lys Arg Lys Thr Val Asn Gly Asp Asp
        35                  40                  45
Ile Val Trp Ala Leu Gly Ser Leu Gly Phe Asp Asp Tyr Ala Glu Pro
    50                  55                  60
Leu Lys Arg Tyr Leu Asn Arg Tyr Arg Glu Val Glu Gly Glu Arg Ala
65                  70                  75                  80
Ser Gln Asn Lys Val Thr Gly Gly Glu Ser Arg Asn Glu Lys Asn Leu
                85                  90                  95
Tyr Gly Asp Glu Ser Pro Glu Lys Gln Leu Gly Ala Ala Ser Ser Ser
            100                 105                 110
Pro Leu Lys Phe Phe Asp Val Ala Asp Arg Ser Thr Asn
        115                 120                 125
```

<210> 858
<211> 113
<212> PRT
<213> Eucalyptus grandis

<400> 858

```
Val Asn Ser Val Phe Glu Leu His Lys Leu Leu Ala Arg Pro Gly Ala
 1               5                  10                  15
Ile Glu Lys Val Leu Gly Val Val Arg Gln Val Arg Pro Ala Ile Val
            20                  25                  30
Thr Val Val Glu Gln Glu Ala Asn His Asn Gly Pro Val Phe Val Asp
        35                  40                  45
Arg Phe Asn Glu Ser Leu His Tyr Tyr Ser Thr Leu Phe Asp Ser Leu
    50                  55                  60
Glu Gly Cys Ala Ser Thr Gln Asp Lys Ala Met Ser Glu Val Tyr Leu
```

```
65                  70                  75                  80
Gly Lys Gln Ile Cys Asn Val Val Ala Cys Glu Gly Ala Asp Arg Val
                85                  90                  95
Glu Arg His Glu Thr Leu Ala Gln Trp Arg Val Arg Leu Gly Gly Ala
            100                 105                 110
Gly


      <210> 859
      <211> 114
      <212> PRT
      <213> Eucalyptus grandis

      <400> 859
Ser Leu Phe Asn Thr Ser Lys Ser Asn Lys His Leu Trp Glu Gln Ile
 1               5                  10                  15
Ser Ser Lys Met Arg Glu Lys Gly Phe Asp Arg Ser Pro Thr Met Cys
            20                  25                  30
Thr Asp Lys Trp Arg Asn Leu Leu Lys Glu Tyr Lys Lys Ala Lys Tyr
        35                  40                  45
Gln Asp Arg Gly Ser Ala Lys Met Ser Tyr Tyr Lys Glu Ile Glu Glu
    50                  55                  60
Ile Leu Arg Glu Arg Ser Lys Asn Asn Gln Tyr Lys Ser Pro Thr Ala
65                  70                  75                  80
Ser Ala Leu Lys Val Asp Pro Tyr Met Gln Phe Ser Asp Lys Gly Ile
                85                  90                  95
Glu Asp Ala Gly Met Thr Phe Gly Pro Val Glu Ala Ser Gly Arg Pro
            100                 105                 110
Thr Leu


      <210> 860
      <211> 181
      <212> PRT
      <213> Eucalyptus grandis

      <400> 860
Asp Leu Glu Leu Lys Val Arg Glu Leu Glu Thr Val Met Leu Gly Pro
 1               5                  10                  15
Ser Ser Asp Met Pro His Thr Val Asp Ile Asn Phe Leu Val Gly Ser
            20                  25                  30
Gly Gln Met Ser Gln Glu Thr Glu Thr Leu Met Glu Ile Ile Ser Arg
        35                  40                  45
Arg Asp Leu Lys Glu Ile Leu Cys Ala Cys Ala Lys Ala Val Glu Asp
    50                  55                  60
Asn Asp Thr Leu Lys Phe Glu Cys Leu Ile Ser Glu Leu Arg Pro Met
65                  70                  75                  80
Val Ser Val Ser Gly Asp Pro Ile Gln Arg Leu Ser Ala Tyr Met Leu
                85                  90                  95
Glu Gly Leu Ile Ala Arg Leu Ala Ser Ser Gly Ser Ser Ile Tyr Lys
            100                 105                 110
Ala Leu Lys Cys Lys Glu Pro Ala Gly Ala Glu Leu Leu Ser Tyr Met
        115                 120                 125
His Ile Leu Tyr Asp Ile Cys Pro Tyr Phe Lys Phe Gly Tyr Met Ser
    130                 135                 140
Ala Asn Gly Ser Ile Ala Glu Val Met Lys Asp Glu Asn Ile Ile His
145                 150                 155                 160
Ile Ile Asp Phe Gln Ile Ala Gln Gly Gly Gln Trp Ile Thr Leu Ile
                165                 170                 175
Gln Ala Leu Ala Ala
            180
```

<210> 861
<211> 58
<212> PRT
<213> Eucalyptus grandis

<400> 861
Met Ala Arg Ser Ser Cys Asn Gln Lys Leu Arg Lys Gly Leu Trp Ser
1 5 10 15
Pro Glu Glu Asp Glu Lys Leu Phe Asn Tyr Ile Ser Arg His Gly Leu
20 25 30
Gly Cys Trp Ser Ser Val Pro Lys Leu Ala Gly Leu Gln Arg Cys Gly
35 40 45
Lys Ser Cys Arg Leu Arg Trp Ile Asn Tyr
50 55

<210> 862
<211> 86
<212> PRT
<213> Eucalyptus grandis

<400> 862
Met Ala Ser Gly Met Glu Asn Arg Gly Glu Ile Pro Ala Asn Leu Lys
1 5 10 15
Lys Gln Leu Ala Leu Ala Val Arg Lys Ile Gln Trp Ser Tyr Gly Ile
20 25 30
Phe Trp Ser Ile Ser Thr Arg Gln Pro Gly Val Leu Glu Trp Gly Asp
35 40 45
Gly Tyr Tyr Asn Gly Asp Ile Lys Thr Arg Lys Thr Ile Gln Ala Val
50 55 60
Glu Leu Asn Thr Asp Gln Ile Gly Met Gln Arg Ser Glu Gln Leu Arg
65 70 75 80
Glu Leu Tyr Glu Ser Leu
85

<210> 863
<211> 182
<212> PRT
<213> Eucalyptus grandis

<400> 863
Asn Ile Gln Arg Asn Glu Tyr His Asn Leu Phe Asn Phe Ile Ser Gly
1 5 10 15
Lys Gly Leu Lys Ile Met Asn Leu Gly Glu Gln Gly Ala Asp Gly Val
20 25 30
Pro Gly Val Leu Asp Val Asp Asp Asp Asp Ala Val Asp Pro His Leu
35 40 45
Glu Arg Ile Arg Ile Glu Ala Gly Val Asp Glu Ser Asp Glu Glu Asp
50 55 60
Glu Asp Phe Val Ile Asp Lys Asp Asp Gly Gly Ser Pro Thr Asp Asp
65 70 75 80
Ser Gly Asp Asp Glu Ser Asp Val Ser Glu Ser Gly Asp Glu Lys Glu
85 90 95
Lys Glu Lys Tyr Gly Lys Lys Glu Ser Arg Lys Glu Val Lys Ala Ser
100 105 110
Ser Ser Lys Lys Lys Ala Lys Ala Gly Asp Glu Glu Gly Ser Lys Lys
115 120 125
Lys Lys Gln Lys Lys Lys Asp Pro Asn Ala Pro Lys Lys Ala Met Ser
130 135 140
Gly Tyr Asn Phe Phe Leu Gln Thr Glu Ser Glu Lys Met Lys Arg Thr
145 150 155 160

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Asn Pro Gly Leu Ser Phe Gly Asp Val Ser Arg Glu Ile Ala Asp Lys
                165                 170                 175
Trp Arg Gly Leu Ser Ala
            180

      <210> 864
      <211> 55
      <212> PRT
      <213> Eucalyptus grandis

      <400> 864
Met Ser Phe Thr Gly Thr Gln Val Lys Cys Lys Ala Cys Glu Lys Thr
 1               5                  10                  15
Val Tyr Pro Val Glu Gln Leu Ser Ala Asp Gly Val Ala Tyr His Lys
            20                  25                  30
Tyr Cys Phe Lys Cys Ser His Cys Lys Gly Thr Leu Lys Leu Ser Ser
        35                  40                  45
Tyr Ser Ser Met Glu Gly Val
    50                  55

      <210> 865
      <211> 151
      <212> PRT
      <213> Eucalyptus grandis

      <400> 865
Asp Lys Ser Ser Ser Pro Val Pro Pro Gln Asp Gln Thr Gly Val His
 1               5                  10                  15
Val Tyr His Pro Asp Trp Ala Ala Met His Ala Tyr Tyr Gly Pro Arg
            20                  25                  30
Val Ala Leu Pro Pro Tyr Tyr Asn Ser Ala Val Ser Ser Gly His Gly
        35                  40                  45
Pro His Pro Tyr Met Trp Gly Pro Pro Gln Pro Met Met Pro Pro Tyr
    50                  55                  60
Gly Pro Pro Tyr Ala Ala Ile Tyr Ser His Gly Gly Val Tyr Gly His
65                  70                  75                  80
Pro Ala Ile Pro Leu Thr Pro Thr Pro Leu Ala Ala Glu Thr Pro Lys
                85                  90                  95
Lys Ser Ser Ala Asn Ser Asp Asn Gly Leu Val Lys Lys Leu Lys Ser
            100                 105                 110
Phe Glu Gly Leu Ala Met Ser Ile Gly Ser Gly Gly Asp Ala Asp Ser
        115                 120                 125
Ala Asp Asp Gly Thr Asp Lys Arg Ser Ser Gln Ser Ala Asp Ser Gly
    130                 135                 140
Asp Ser Ser Asp Glu Asp Gln
145                 150

      <210> 866
      <211> 203
      <212> PRT
      <213> Eucalyptus grandis

      <400> 866
Arg Phe Lys Gln Leu Leu Glu Glu Ala Ser Gln Asp Ile Asp His Thr
 1               5                  10                  15
Thr Asp Tyr Tyr Thr Phe Arg Lys Lys Trp Gly Asn Asp Pro Arg Phe
            20                  25                  30
Glu Ala Leu Asp Arg Lys Asp Arg Glu Asn Leu Leu Asn Glu Arg Val
        35                  40                  45
Leu Pro Leu Lys Lys Ala Ala Glu Glu Arg Ala Gln Ala Met Arg Ala
    50                  55                  60
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Ala Ala Thr Ser Ser Phe Lys Ser Leu Leu Arg Asp Arg Gly Asp Ile
65                  70                  75                  80
Thr Val Asn Ser Arg Trp Ser Arg Val Lys Asp Ser Leu Arg Asp Asp
                85                  90                  95
Pro Arg Tyr Lys Ser Val Lys His Glu Asp Arg Glu Ala Leu Phe Asn
            100                 105                 110
Glu Tyr Ile Ala Glu Leu Lys Ala Val Glu Asp Arg Glu Glu Lys Glu
        115                 120                 125
Ala Lys Ala Lys Arg Glu Glu Gln Glu Lys Leu Lys Glu Arg Glu Arg
    130                 135                 140
Glu Leu Arg Lys Arg Lys Glu Arg Glu Glu Gln Glu Met Glu Arg Val
145                 150                 155                 160
Arg Val Lys Ile Arg Arg Lys Glu Ala Ile Ala Ser Phe Gln Ala Leu
                165                 170                 175
Leu Val Glu Thr Ile Lys Asp Pro Gln Leu Pro Gly Gln Ser Gln Lys
            180                 185                 190
Leu Asn Leu Thr Lys Ile Leu Arg Thr Cys Glu
        195                 200

      <210> 867
      <211> 113
      <212> PRT
      <213> Eucalyptus grandis

      <400> 867
Glu Ile Lys Asn Tyr Trp Asn Thr Arg Ile Lys Arg Leu Gln Arg Thr
 1               5                  10                  15
Gly Met Pro Ile Tyr Pro Thr Glu Val Cys Leu Gln Val Ser Ser Glu
            20                  25                  30
Asn Gln Glu Thr His Asn Met Gly Asn Leu His Thr Ala Gly Glu Asp
        35                  40                  45
Asn Cys Asp Leu Ser Gln Ala Asp Pro Leu Glu Ile Pro Glu Val Asp
    50                  55                  60
Phe Arg Lys Leu Glu Leu His Leu Gly Phe Ser Ser Phe Trp Ser Thr
65                  70                  75                  80
Leu Leu Asp Val Pro Pro Cys Gly Phe Gly Arg Glu Ala Met Cys Leu
                85                  90                  95
Ser Asp Ala Tyr Cys Leu Pro Phe Pro Ser Ser Arg Ser Pro Lys Arg
            100                 105                 110
Leu


      <210> 868
      <211> 107
      <212> PRT
      <213> Eucalyptus grandis

      <400> 868
Thr Thr Arg Ile Pro Ala Ala Asn Leu Glu Asp Leu Phe Asp Asn His
 1               5                  10                  15
Asn Met Ala Arg Ile Arg Asp Val Trp Ala Pro Asn Leu Glu Ile Glu
            20                  25                  30
Met Gln Asn Ile Arg Glu Ala Ile Glu Lys Tyr Ser Tyr Val Ser Met
        35                  40                  45
Asp Thr Glu Phe Leu Ser Gly Ala Arg Pro Ile Gly Asn Phe Lys Thr
    50                  55                  60
Ser Ser Asp Tyr His Tyr Gln Thr Met Arg Cys Asn Val Asp Leu Leu
65                  70                  75                  80
Lys Ile Ile Gln Val Gly Ile Thr Leu Ala Asp Glu Glu Gly Leu Phe
                85                  90                  95
Pro Gln Asp Cys Ser Thr Trp Gln Val Gln Leu
```

100 105

<210> 869
<211> 85
<212> PRT
<213> Eucalyptus grandis

<400> 869
Met Gly Arg Ser Pro Cys Cys Glu Gly Asn Gly Leu Lys Lys Gly Pro
1 5 10 15
Trp Ser Ser Glu Glu Asp Lys Lys Leu Leu Asp Phe Ile Gln Gln His
20 25 30
Gly His Gly Ser Trp Ile Ser Leu Pro Lys Arg Ala Gly Leu Asn Arg
35 40 45
Cys Gly Lys Ser Cys Arg Leu Arg Trp Ile Asn Tyr Leu Trp Pro Asp
50 55 60
Ile Lys Arg Gly Ser Phe Ser Pro Glu Glu Glu Gln Thr Ile Leu His
65 70 75 80
Leu His Ser Val Leu
85

<210> 870
<211> 85
<212> PRT
<213> Eucalyptus grandis

<400> 870
Met Pro Trp Lys Thr Gly Leu Thr Gly Ser Lys Thr Glu Glu Asp Lys
1 5 10 15
Ala Leu Gln Leu Cys Arg Glu Arg Lys Lys Ser Val Arg Gln Ala Val
20 25 30
Asp Gly Trp Gly Ser Leu Val Tyr Ala His Phe Met Phe Val Gln Ser
35 40 45
Leu Arg Asn Val Gly Thr Ala Leu Thr Lys Phe Phe Glu Thr Glu Ser
50 55 60
Pro Asn Gly Ser Pro Ser Tyr Ala Ser Met Ser Thr Thr Pro Glu Pro
65 70 75 80
Ile Ala Leu Thr Glu
85

<210> 871
<211> 104
<212> PRT
<213> Eucalyptus grandis

<400> 871
Gly Leu Leu Arg Cys Ser Lys Ser Cys Arg Leu Arg Trp Thr Asn Tyr
1 5 10 15
Leu Arg Pro Gly Ile Lys Arg Gly Ser Phe Thr Asp Gln Glu Glu Lys
20 25 30
Met Ile Val His Leu Gln Ala Leu Leu Gly Asn Arg Gly Ala Ala Ile
35 40 45
Ala Ser Tyr Leu Pro Gln Arg Thr Asp Asn Asp Ile Lys Asn Tyr Trp
50 55 60
Asn Thr His Leu Lys Lys Lys Leu Lys Lys Leu Gln Gly Gln Ala Asn
65 70 75 80
Pro Asp Asp Asp Asp His Asn His His Pro Gln Gly Phe Asn Ala Thr
85 90 95
Ser His Ser Asn Pro Lys Gly Gln
100

<210> 872
<211> 102
<212> PRT
<213> Eucalyptus grandis

<400> 872
Met Ala Arg Thr Pro Cys Cys Glu Lys Met Gly Met Lys Lys Gly Pro
1 5 10 15
Trp Thr Pro Glu Glu Asp Gln Ile Leu Ile Ser His Ile His Gln Phe
20 25 30
Gly His Ser Asn Trp Arg Ala Leu Pro Arg Gln Ala Gly Leu Leu Arg
35 40 45
Cys Gly Lys Ser Cys Arg Leu Arg Trp Ile Asn Tyr Leu Arg Pro Asp
50 55 60
Val Lys Arg Gly Asn Phe Thr Asp Asp Glu Arg Asp Thr Ile Ile Glu
65 70 75 80
Leu His Gln Val Leu Gly Asn Arg Trp Ser Ala Ile Ala Ser Arg Leu
85 90 95
Pro Gly Arg Thr Asp Asn
100

<210> 873
<211> 125
<212> PRT
<213> Eucalyptus grandis

<400> 873
Trp Thr Ala Glu Glu Asp Lys Lys Leu Ile Asn Phe Ile Leu Thr His
1 5 10 15
Gly Gln Cys Cys Trp Arg Ala Val Pro Lys Leu Ala Gly Leu Leu Arg
20 25 30
Cys Gly Lys Ser Cys Arg Leu Arg Trp Thr Asn Tyr Leu Arg Pro Asp
35 40 45
Leu Lys Arg Gly Leu Leu Ser Glu Tyr Glu Glu Lys Met Val Ile Asp
50 55 60
Leu His Ala Gln Leu Gly Asn Arg Trp Ser Lys Ile Ala Ser His Leu
65 70 75 80
Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn His Trp Asn Thr His Ile
85 90 95
Lys Lys Lys Leu Lys Lys Met Gly Ile Asp Pro Leu Thr His Lys Pro
100 105 110
Leu Val Thr Asn Asn Asp Asn Thr Thr Asp Gln Gln Pro
115 120 125

<210> 874
<211> 114
<212> PRT
<213> Eucalyptus grandis

<400> 874
Met Asp Lys Lys Pro Asp Asp Asp Ser Gly Lys Ser Gln Asp Val Glu
1 5 10 15
Val Arg Lys Gly Pro Trp Thr Met Glu Glu Asp Leu Ile Leu Ile Asn
20 25 30
Tyr Ile Ala Asn His Gly Glu Gly Ser Trp Asn Ser Leu Ala Lys Ala
35 40 45
Ala Gly Leu Lys Arg Thr Gly Lys Ser Cys Arg Leu Arg Trp Leu Asn
50 55 60
Tyr Leu Arg Pro Asp Val Arg Arg Gly Asn Ile Thr Thr Glu Glu Gln
65 70 75 80
Leu Leu Ile Met Glu Leu His Ala Lys Trp Gly Asn Arg Asp Ala His

85 90 95
Lys Ser His Asn Phe Ser Leu His Arg Phe Tyr Asn Ile Ile Pro Ile
100 105 110
Asp His

<210> 875
<211> 127
<212> PRT
<213> Eucalyptus grandis

<400> 875
Asn Gly Asp Ser Val Lys Asp Asp Leu Asp Thr Asp Glu Tyr Glu Thr
1 5 10 15
His Ala Thr Val Leu Asp Lys Leu Leu Ala Trp Glu Lys Lys Leu Tyr
20 25 30
Glu Glu Val Lys Gln Gly Glu His Met Lys Leu Glu Tyr Gln Lys Lys
35 40 45
Val Ala Leu Leu Asn Lys Gln Lys Lys Arg Gly Ala Ser Gly Glu Ser
50 55 60
Leu Glu Lys Thr Lys Ala Ala Val Ser His Leu His Thr Thr Tyr Ile
65 70 75 80
Val Asp Met Gln Ser Met Asp Ser Thr Ala Ser Glu Ile Asn His Ile
85 90 95
Arg Asp Lys Gln Leu Tyr Pro Lys Leu Ala Gln Leu Val Asp Gly Met
100 105 110
Ala Asn Met Trp Glu Lys Met Arg Met His His Asp Lys Gln Glu
115 120 125

<210> 876
<211> 153
<212> PRT
<213> Eucalyptus grandis

<400> 876
Pro Glu Thr Val His Val Gln Asn Tyr Ser Pro Ile His Gln Met Gly
1 5 10 15
Ile Asp Gly Phe Phe Pro Ala His Pro Ser Pro Gln Asn Pro Ser Tyr
20 25 30
His Ser Tyr Ser Pro Asn Asn Arg Pro Asn Phe Pro Pro Pro Ser Pro
35 40 45
Gln Thr Ser Gln Trp Asp Tyr Phe Trp Asn Pro Phe Ser Ser Leu Asp
50 55 60
Tyr Tyr Gly Tyr Pro Thr Arg Ser Ser Ile Asp His Met Ala Met Asp
65 70 75 80
Asp Glu Thr Arg Gly Leu Arg Gln Val Arg Glu Glu Glu Gly Ile Pro
85 90 95
Asp Leu Glu Glu Glu Thr Glu His Glu Glu Cys Asp His His Ser Tyr
100 105 110
Val Asp Glu Asp Arg Gly Asn Arg Asp Ala Asn Phe Pro Thr Glu Glu
115 120 125
Val Leu Val Glu Asp Val Asp Asp Glu Glu Glu Asp Glu Asp Glu Gly
130 135 140
Asn Arg His Ser Cys Glu Ser Glu Asp
145 150

<210> 877
<211> 62
<212> PRT
<213> Eucalyptus grandis

<400> 877
Val Leu Arg Ala Gln Leu Met Glu Leu Thr Asp Arg Leu Arg Ser Leu
1 5 10 15
Asn Ser Val Leu Gln Val Val Glu Val Val Ser Gly Leu Ala Ile Asp
20 25 30
Ile Pro Glu Ile Pro Asp Pro Leu Met Asn Pro Trp Gln Leu Pro Cys
35 40 45
Pro Met Gln Pro Ile Thr Ala Ser Ala Asp Met Leu Gln Leu
50 55 60

<210> 878
<211> 135
<212> PRT
<213> Eucalyptus grandis

<400> 878
Leu Thr Leu Thr Ala Ala Ser Thr Val Ile Phe Ala Glu Leu Ser Trp
1 5 10 15
Thr Pro Gly Asp Leu Ile Gln Ala Glu Asp Arg Ala His Arg Ile Gly
20 25 30
Gln Val Ser Ser Val Asn Ile Tyr Tyr Leu Leu Ala Asn Asp Thr Val
35 40 45
Asp Asp Ile Ile Trp Asp Val Val Gln Ser Lys Leu Glu Asn Leu Gly
50 55 60
Gln Val Leu Asp Gly His Glu Asn Thr Leu Glu Val Ser Ala Ser Gln
65 70 75 80
Pro Thr Arg Asn Ser Pro Ala Lys Gln Lys Thr Phe Asn Ser Pro Gly
85 90 95
Lys Gln His Thr Phe Asn Ser Pro Gly Lys Gln Gln Lys Phe Asn Ser
100 105 110
Pro Gly Lys Gln Thr Thr Leu Asp Ser Phe Met Lys Arg Cys Asn Ser
115 120 125
Gly Asp Pro Ser Glu His Gln
130 135

<210> 879
<211> 138
<212> PRT
<213> Eucalyptus grandis

<400> 879
Met Ala Leu Glu Ala Ile Asn Ser Pro Thr Ala Ala Ser Ala Pro Phe
1 5 10 15
Gln Phe Met Glu Glu Pro Leu Ser Ser Arg Phe Leu Glu Pro Leu Asn
20 25 30
Lys Arg Lys Arg Ser Lys Arg Pro His His Pro Pro Ser Glu Asp Glu
35 40 45
Tyr Leu Ala Leu Cys Leu Ile Met Leu Ala Arg Ser Gly Ala Ala Pro
50 55 60
Lys Pro Asn His His Ala Ser Pro Ala Pro Leu Pro Pro Pro Pro Pro
65 70 75 80
Pro Ala Pro Thr Lys Pro Glu Glu Ala Ala Ala Thr Ala Thr Ala Thr
85 90 95
Ala Ala Pro Ala Asn Asn Leu Ser Tyr Lys Cys Ala Val Cys Gly Lys
100 105 110
Gly Phe Pro Ser Tyr Gln Ala Leu Gly Gly His Lys Ala Ser His Arg
115 120 125
Lys Ser Ala Ala Ala Ala Ala Ala Ala Ala
130 135

<210> 880

<211> 124
<212> PRT
<213> Eucalyptus grandis

<400> 880
Ala Ile Ala Leu Val Leu Ala Lys Arg Glu Ile Ile Arg Ser Ile Gly
1 5 10 15
Thr Gly Leu Asp Trp Ser Ser Pro Ser Ala Gly Ser Ser Thr Ser Leu
20 25 30
Pro Glu Ile Lys Gly Thr Leu Val Ile Cys Pro Val Val Ala Val Thr
35 40 45
Gln Trp Val Gly Glu Ile Asn Cys Ser Thr Ala Gln Gly Ser Thr Lys
50 55 60
Val Leu Val Tyr His Gly Ala Asn Arg Gly Lys Thr Ala Asp Gln Phe
65 70 75 80
Lys Asn Phe Asp Phe Val Val Thr Thr Tyr Ser Leu Val Glu Gly Glu
85 90 95
Tyr Arg Lys Phe Val Met Pro Pro Lys Lys Lys Cys Ile Tyr Cys Gly
100 105 110
Lys Leu Leu Tyr Lys Glu Lys Met Thr Val His Leu
115 120

<210> 881
<211> 196
<212> PRT
<213> Eucalyptus grandis

<400> 881
Pro Asp Leu Pro Gly Asp Asp Leu Ala Leu Glu Phe Glu Glu Phe Asp
1 5 10 15
Phe Gln Ser Leu Phe Asp Glu Leu Ser Pro Asp Ala Ala Gly Leu Leu
20 25 30
Asp Ala Ser Asp Val Asp Ala Ser Ser Pro Gly Ser Leu Ser Ser Trp
35 40 45
Ile Gly Glu Ile Glu Gly Met Leu Met Lys Asp Asp Glu Glu Ala Val
50 55 60
Ala Val Glu Pro Ser Gln Glu Val Phe Asp Arg Phe Phe Ala Gly Leu
65 70 75 80
Leu Val Asp Ser Pro Glu Gly Gly Pro Ala Glu Ala Thr Asp Gly Ala
85 90 95
Ser Asp Lys Glu Ser Asn Ser Ser Asp Gly Gly Gly Gly Gly Gly Gly
100 105 110
Glu Arg Asp Glu Lys Leu Val Val Gly Asp Asn Glu Leu Ser Glu Asp
115 120 125
Ala Asp Asp Asp Asp Pro Val Ser Lys Lys Gln Arg Arg Gln Leu Arg
130 135 140
Asn Lys Asp Ala Ala Ala Arg Ser Arg Glu Arg Lys Arg Ser Tyr Val
145 150 155 160
Lys Glu Leu Glu Met Lys Ser Lys Tyr Met Glu Gly Glu Cys Arg Arg
165 170 175
Leu Gly Arg Leu Leu Gln Cys Phe Val Ala Glu Asn Gln Ala Leu Arg
180 185 190
Leu Asn Leu Glu
195

<210> 882
<211> 102
<212> PRT
<213> Eucalyptus grandis

<400> 882

Val Ile Ser Ser Gln Ser Met His Leu Gly Val Leu Ala Thr Ala Ser
1 5 10 15
His Ala Val Thr Thr Gln Thr Leu Phe Val Val Tyr Tyr Lys Pro Arg
20 25 30
Thr Ser Gln Phe Ile Ile Ser Leu Asn Lys Tyr Leu Glu Ala Leu Asn
35 40 45
Asn Lys Phe Thr Val Gly Met Arg Phe Lys Met Arg Phe Glu Gly Glu
50 55 60
Asp Ser Pro Glu Arg Arg Phe Ser Gly Thr Ile Val Gly Val Glu Asp
65 70 75 80
Phe Ser Pro Gln Trp Asp Asn Ser Ser Trp Arg Ser Leu Lys Val His
85 90 95
Trp Asp Glu His Ala Ser
100

<210> 883
<211> 69
<212> PRT
<213> Eucalyptus grandis

<400> 883
Phe Asn Gln Leu Asp Pro Arg Ile Asn Arg Lys Pro Phe Ser Glu Glu
1 5 10 15
Glu Glu Glu Arg Leu Leu Thr Ala His Lys Leu Cys Gly Asn Lys Trp
20 25 30
Ala Met Ile Ala Arg Leu Phe Pro Gly Arg Thr Asp Asn Ala Val Lys
35 40 45
Asn His Trp His Val Ile Val Ala Arg Lys Gln Arg Glu Gln Ser Asn
50 55 60
Asn Ala Arg Gly Arg
65

<210> 884
<211> 74
<212> PRT
<213> Eucalyptus grandis

<400> 884
Gln Lys Tyr Phe Ile Arg Gln Ser Asn Val Ser Lys Arg Lys Arg Arg
1 5 10 15
Ser Ser Leu Phe Asp Ile Val Ala Glu Glu Ser Val Asp Val Pro Met
20 25 30
Gly Ser Arg Asp Phe Phe Ala Val Asp Glu Gln Gln Gln Glu Thr Glu
35 40 45
Val Asn Asp Ala Leu Gln Gln Leu Pro Pro Asp Val Asp Glu Glu Cys
50 55 60
Glu Ser Met Asp Ser Thr Asn Ser Asn Thr
65 70

<210> 885
<211> 61
<212> PRT
<213> Eucalyptus grandis

<400> 885
Ser Ser Ser Ser Arg His Glu Ser Arg His Pro Ile Pro Leu Leu Thr
1 5 10 15
Asn Gly Gln Pro Met Ser Gly Glu Ile Pro Cys Ala Ser Ile Asp Ser
20 25 30
Pro Ser Val Arg Thr Thr Ser Gly Pro Leu Gly Pro Phe Asp Lys His
35 40 45

Val His Ser Leu Pro Tyr Val Asp Pro Arg Gln Pro Val
50 55 60

<210> 886
<211> 142
<212> PRT
<213> Eucalyptus grandis

<400> 886
Ser Pro Pro Leu Ser Ala His Val Ala Ser His Lys Gly Leu His Gln
1 5 10 15
Ala Ser Lys Pro Lys Ile His Glu Cys Asn Ile Cys Gly Ser Glu Phe
20 25 30
Ala Ser Gly Gln Ala Leu Gly Gly His Met Arg Arg His Arg Ser Ala
35 40 45
Pro Pro Pro Thr Ala Thr Ser Ala Asp Ala Thr Ser Pro Thr Asn Pro
50 55 60
Pro Ala Ala Ala Ala Ile Thr Thr Glu Lys Ser Arg Asn Ile Leu Ser
65 70 75 80
Leu Asp Leu Asn Leu Pro Ala Pro Asn Gly Gly Gly Ser Pro Pro Pro
85 90 95
Ser Ala Pro Pro Pro Gly Glu Leu Glu Val Pro Ile Arg His Lys Ser
100 105 110
Thr Ala His His Thr Ser Leu Ala Arg Leu Gly Gly Leu Pro Leu Leu
115 120 125
Lys Lys Lys Glu Lys Thr Gly Ser His Val Asn Gln Cys Asn
130 135 140

<210> 887
<211> 139
<212> PRT
<213> Eucalyptus grandis

<400> 887
Ala Val Ser Asp Ile Asn Leu Val Ser Asn Ser Thr His Ser Ser Tyr
1 5 10 15
Glu Asp Gly Gly Ser Pro Arg Arg Ile Thr Ser Glu Ser Asp Pro Lys
20 25 30
Asp Ala Pro Met Gly Thr Glu Ser Leu Leu Ser Ala Pro Glu Ala Val
35 40 45
Glu Leu Ser Asp Thr Gly Thr Ser Phe Thr Phe Lys Met Asp Ser Ser
50 55 60
Met Gln Arg Lys Pro Pro Val Asp Glu Ser Pro Arg Met His Pro Leu
65 70 75 80
Pro Met Asn Leu Thr Thr Glu Glu Gly Asp Asn Asn Val Ser Cys Gln
85 90 95
Leu Asn Leu Ser Leu Ala Ser Ser Leu Leu Gln Val Asp His Ser Gln
100 105 110
Gln Phe Asn Arg Leu Asn Val Leu Gly Ser Glu Thr Ser Lys Ser Pro
115 120 125
Asp Ala Arg Ser Asn Ala Ser Ile Thr Glu Ser
130 135

<210> 888
<211> 36
<212> PRT
<213> Eucalyptus grandis

<400> 888
His Pro Glu Tyr Asn Ser Ser Pro Val Gly Tyr Met Glu Thr Asn Lys
1 5 10 15

Ala Arg Leu Val Leu Glu Lys Asp Asp Leu Gly Leu Asn Leu Met Pro
20 25 30
Pro Ser Thr Cys
35

<210> 889
<211> 176
<212> PRT
<213> Eucalyptus grandis

<400> 889
Asn Ile Gly Ala Lys Ala Asp Val Phe His Ile Leu Ser Gly Met Trp
1 5 10 15
Lys Thr Pro Ala Glu Arg Cys Phe Met Trp Leu Gly Gly Phe Arg Ser
20 25 30
Ser Glu Leu Leu Lys Ile Leu Gly Asn His Leu Glu Pro Leu Thr Asp
35 40 45
Gln Gln Leu Met Gly Ile Cys Asn Leu Gln Gln Ser Ser Gln Gln Ala
50 55 60
Glu Asp Ala Leu Ser Gln Gly Met Glu Ala Leu Gln Gln Ser Leu Val
65 70 75 80
Asp Thr Leu Ser Ser Thr Thr Leu Ser Pro Thr Gly Ser Gly Asn Val
85 90 95
Ala Glu Tyr Met Gly Gln Met Ala Ile Ala Met Gly Lys Leu Ala Thr
100 105 110
Leu Glu Asn Phe Val His Gln Ala Asp Leu Leu Arg Gln Gln Thr Leu
115 120 125
Gln Gln Met His Arg Ile Leu Thr Thr Arg Gln Ala Ala Arg Ala Leu
130 135 140
Leu Val Ile Asn Asp Tyr Ile Ser Arg Leu Arg Ala Leu Ser Ser Leu
145 150 155 160
Trp Leu Ala Arg Pro Arg Thr Glu Asn Ile Cys Ser Ala Lys Leu Phe
165 170 175

<210> 890
<211> 33
<212> PRT
<213> Eucalyptus grandis

<400> 890
Lys Lys Arg Leu Met Val Ala Ser Ala Phe Gly Glu Asp Glu Lys Ala
1 5 10 15
Gly Arg Gln Thr Arg Leu Thr Val Glu Asp Leu Asn Tyr Leu Phe Met
20 25 30
Ala

<210> 891
<211> 51
<212> PRT
<213> Eucalyptus grandis

<400> 891
Met Arg Asp Leu Cys Leu Asp Gln Arg Glu Met Ala Ser Gly Ser Ser
1 5 10 15
Arg Val Glu Ala Arg Ala Asp Ala Glu Met Ala Leu Tyr Asn Glu Leu
20 25 30
Trp Gln Ala Cys Ala Gly Pro Leu Val Ala Val Pro Arg Gln Gly Glu
35 40 45
Arg Val Phe
50

<210> 892
<211> 77
<212> PRT
<213> Eucalyptus grandis

<400> 892
Met Leu Ser Pro Ser Gly Ser Ser Pro Leu Ala Gln Ser Thr Gly Arg
1   5   10   15
His Pro Leu Tyr Arg Gly Val Arg Ser Arg Ser Gly Lys Trp Val Ser
            20   25   30
Glu Ile Arg Glu Pro Arg Lys Thr Thr Arg Ile Trp Leu Gly Thr Tyr
        35   40   45
Pro Asn Pro Glu Met Ala Ala Ala Ala Phe Asp Val Ala Ala Leu Ala
    50   55   60
Leu Lys Gly Ser Asp Ala Ala Leu Asn Phe Pro His Asp
65   70   75

<210> 893
<211> 95
<212> PRT
<213> Eucalyptus grandis

<400> 893
Phe Pro Gln Gly His Met Glu Gln Leu Glu Ala Ser Thr Asn Gln Glu
1   5   10   15
Leu Asn Gln Arg Ile Pro Leu Phe Asn Leu Thr Ser Lys Ile Leu Cys
            20   25   30
Gln Val Val Asn Val Gln Leu Leu Ala Glu Gln Glu Thr Asp Glu Val
        35   40   45
Tyr Ala Gln Ile Thr Leu Ile Pro Ala Gly Asn Leu Met Glu Pro Thr
    50   55   60
Ser Pro Asp Pro Val Ser Ala Glu Thr Pro Arg Thr Arg Val His Ser
65   70   75   80
Phe Cys Lys Val Leu Thr Ala Ser Asp Thr Ser Thr His Gly Gly
                85   90   95

<210> 894
<211> 79
<212> PRT
<213> Eucalyptus grandis

<400> 894
Met Gly Ser Asn Ile Asn Phe Lys Asn Phe Ser Thr Asp Pro Thr Pro
1   5   10   15
Thr Asn Asn Arg Pro Pro Gly Asn Thr Leu Leu Thr Arg Gln Pro Ser
            20   25   30
Val Tyr Thr Leu Thr Phe Glu Glu Phe Gln Asn Ser Ile Gly Lys Asp
        35   40   45
Phe Gly Ser Met Asn Met Asp Glu Leu Ile Lys Asn Ile Trp Ser Ala
    50   55   60
Glu Glu Asn Gln Ser Met Ala Ser Ala Ser Gly Ala Cys Gly Gly
65   70   75

<210> 895
<211> 57
<212> PRT
<213> Eucalyptus grandis

<400> 895
Met Gln Ala Cys Gly Ser Tyr Glu Tyr Ser Glu Gln Tyr His Asp Glu

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 1               5                   10                  15
Val Lys Pro Ala Tyr Gly Pro Gln Ile Ser Ala His Ser Gln Tyr Leu
            20                  25                  30
Gly Tyr Asn Ser Leu Arg Leu Gly Leu Pro Leu Arg Val Ala Glu Glu
        35                  40                  45
Pro Val Tyr Val Asn Ala Lys Gln Tyr
    50                  55
```

<210> 896
<211> 167
<212> PRT
<213> Eucalyptus grandis

<400> 896

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Pro Asp Val Pro Leu Pro Ser Pro Ala Gly Asp Val Thr Asp Ala Glu
 1               5                  10                  15
Trp Phe Tyr Val Met Ser Leu Thr Arg Ser Phe Ser Ala Gly Asp Gly
            20                  25                  30
Ile Pro Gly Lys Ala Leu Ser Thr Gly Ser Leu Val Trp Leu Thr Gly
        35                  40                  45
Ala Arg Glu Leu Glu Ser Tyr Lys Cys Asp Arg Ala Lys Glu Ala Glu
    50                  55                  60
Leu His Gly Ile Arg Thr Met Val Cys Ile Pro Thr Gly Asp Gly Val
65                  70                  75                  80
Leu Glu Leu Gly Ser Cys Asp Val Ile Pro Glu Asn Trp Gly Leu Val
                85                  90                  95
Gln Arg Ala Lys Ser Leu Phe Gly Ser Asp Leu Leu Leu Pro Lys His
            100                 105                 110
Pro Pro Pro Pro Pro Pro Pro Phe Gln Leu His His Asp His Ser Asp
        115                 120                 125
Ile Ser Phe Ala Asp Ile Gly Ile Ile Ala Gly Val Gln Glu Asn Asp
    130                 135                 140
Phe Ala Pro His Asp Asp His Glu Lys Lys Val Lys Lys Lys Gln Pro
145                 150                 155                 160
Leu Val Glu Gly Ala Gly Gly
                165
```

<210> 897
<211> 125
<212> PRT
<213> Eucalyptus grandis

<400> 897

```
Val Ala Gly Met Thr Arg Gly Arg Arg Asp Gly Ile Leu Lys Ser Glu
 1               5                  10                  15
Lys Thr Arg His Val Val Lys Ile Gly Pro Met His Leu Lys Gly Val
            20                  25                  30
Trp Ile Pro Tyr Glu Arg Ala Leu Glu Phe Ala Asn Arg Glu Lys Ile
        35                  40                  45
Thr Glu Tyr Leu Tyr Pro Leu Phe Val His Asp Ile Gly Ala Leu Leu
    50                  55                  60
Tyr His Pro Ser Asn Pro Ser Gly Ala Thr Ser Arg Ala Gly Asn Ala
65                  70                  75                  80
Gln Asn Thr Leu Ala Ala Ile Asp Arg Arg Arg Asn Glu Ala Arg Met
                85                  90                  95
Ala Ala Ser Ile Gln Gly Gln Ala Val Ser Gly Val Leu Val Ser Pro
            100                 105                 110
Val Ala Gln Thr Ala Gly Gly Arg Pro Ser Val Asp Arg
        115                 120                 125
```

<210> 898

<211> 120
<212> PRT
<213> Eucalyptus grandis

<400> 898

```
Asn Asn Leu Ser Leu Tyr Asp Asn Gly Val Gly Ser Thr Pro Arg Pro
 1               5                  10                  15
Arg Ser Asn Ala Glu Gln Leu Ile Phe Arg Ala Ala Leu Gln Asp Leu
            20                  25                  30
Ser Gln Pro Lys Ser Glu Glu Thr Pro Pro Asp Gly Ala Leu Ala Val
        35                  40                  45
Pro Leu Leu Arg His Gln Lys Ile Ala Leu Ser Trp Met Val Lys Lys
    50                  55                  60
Glu Thr Ala Ile Asn Cys Cys Gly Gly Ile Leu Ala Asp Asp Gln Gly
65                  70                  75                  80
Leu Gly Lys Thr Val Ser Thr Ile Ala Leu Ile Leu Lys Glu Arg Pro
                85                  90                  95
Pro Thr Phe Lys Gln Cys Gln Glu Asn Pro Lys Gln Glu Leu Gln Thr
            100                 105                 110
Phe Asp Leu Asp Glu Asp Glu Asn
        115                 120
```

<210> 899
<211> 58
<212> PRT
<213> Eucalyptus grandis

<400> 899

```
Met Ser Leu Ser Ala Lys Ser Glu Ser Ile Gln Ile Arg Asp Val Trp
 1               5                  10                  15
Asp Asp Asn Leu Asp Glu Glu Phe Ala Arg Ile Arg Glu Ile Val Asp
            20                  25                  30
Asp Tyr Pro Tyr Val Ala Met Asp Thr Glu Phe Pro Gly Ile Val Val
        35                  40                  45
Arg Pro Val Gly Asn Phe Lys Asn Ser Ser
    50                  55
```

<210> 900
<211> 94
<212> PRT
<213> Eucalyptus grandis

<400> 900

```
Met Ala Asp Ser Asp Asn Asp Ser Gly Gly His Asn Asn Ala Asn Ser
 1               5                  10                  15
Glu Ser Ala Ala Ala Leu Ala Arg Glu Gln Asp Arg Phe Leu Pro Ile
            20                  25                  30
Ala Asn Val Ser Arg Ile Met Lys Lys Ala Leu Pro Ala Asn Ala Lys
        35                  40                  45
Ile Ser Lys Glu Ala Lys Glu Thr Val Gln Glu Cys Val Ser Glu Phe
    50                  55                  60
Ile Ser Phe Ile Thr Gly Glu Ala Ser Asp Gly Ser Ser Ser Ile Gly
65                  70                  75                  80
Gly Gly Gly Gly Gly Val Val Asn Ser Gly Gly Gly Ser Ala
                85                  90
```

<210> 901
<211> 169
<212> PRT
<213> Eucalyptus grandis

<400> 901

```
Lys Ile Asn Pro Asp Arg Trp Glu Phe Val Asn Gln Gly Phe Gln Lys
1               5                   10                  15
Gly Asn Lys His Leu Leu Lys Asn Ile Lys Arg Arg Cys Lys Phe Ser
            20                  25                  30
Glu His Arg Lys Thr Ser Ser Ser Thr Val Thr Ser Asp Tyr Gln Lys
        35                  40                  45
Ala Glu Asn Glu Val Glu Leu Asn Thr Leu Lys Lys Gly Gln Glu Val
    50                  55                  60
Leu Lys Thr Arg Ser Leu Lys Leu Arg Glu Glu Arg Lys Ser Phe Gln
65                  70                  75                  80
His Glu Ile Glu Gln Val Ala Glu Arg Val Arg His Ala Glu Cys Arg
                85                  90                  95
Asn Gln Gln Ile Phe Leu Phe Leu Thr Lys Ala Ala Lys Ser Pro Asn
            100                 105                 110
Phe Val His His Leu Ile Gln Lys Lys Ser Gln Lys Arg Asp Leu Glu
        115                 120                 125
Thr Cys Glu Ser Ser Lys Lys Ser Lys Leu Leu Gly Ser Asp Ala Glu
    130                 135                 140
Ala Thr Lys Phe Leu Asn Glu Ala Met Asp His Met Ile Lys Ser Pro
145                 150                 155                 160
Asn Val Asp Cys Leu Arg Ile Ser Asp
                165
```

<210> 902
<211> 266
<212> PRT
<213> Eucalyptus grandis

<400> 902

```
Gly Ile Leu Ala Ala Ala Ala His Ala Ala Ala Asn Asn Ser Pro Phe
1               5                   10                  15
Thr Ile Phe Tyr Asn Pro Arg Ala Ser Pro Ser Glu Phe Val Ile Pro
            20                  25                  30
Leu Ala Lys Tyr Asn Lys Ala Phe Tyr Thr Gln Val Ser Leu Gly Met
        35                  40                  45
Arg Phe Arg Met Met Phe Glu Thr Glu Glu Ser Gly Val Arg Arg Tyr
    50                  55                  60
Met Gly Thr Ile Thr Gly Ile Ser Asp Leu Asp Ser Val Arg Trp Lys
65                  70                  75                  80
Asn Ser Gln Trp Arg Asn Leu Gln Val Gly Trp Asp Glu Ser Thr Ala
                85                  90                  95
Gly Glu Arg Pro Ser Arg Val Ser Met Trp Glu Ile Glu Pro Val Val
            100                 105                 110
Thr Pro Phe Tyr Ile Cys Pro Pro Pro Phe Phe Arg Pro Lys Phe Pro
        115                 120                 125
Arg Gln Pro Asp Asp Glu Ser Asp Val Glu Asn Ala Phe Lys Arg Ala
    130                 135                 140
Met Pro Trp Leu Gly Asp Glu Phe Gly Ile Lys Asp Thr Pro Asn Ser
145                 150                 155                 160
Ile Phe Pro Gly Leu Ser Leu Met Gln Trp Met Ser Met Gln Gln Ser
                165                 170                 175
Asn Pro Leu Gln Ala Thr Gln Ser Gly Leu Leu Pro Pro Met Leu Ser
            180                 185                 190
Ser Thr Gly Leu His Asn Asn Leu Gly Ile Asp Asp Pro Ser Lys Leu
        195                 200                 205
Leu Ser Phe Gln Ala Pro Thr Gln Gly Leu Gln Phe Asn Lys Thr Asn
    210                 215                 220
Pro Gln Asn Gln Val Ser Gln Leu Leu Gln Pro Ser Met Ala Trp Ser
225                 230                 235                 240
Gln Gln His Gln Leu Gln Gln Leu Leu Gln Asn Pro Leu Gly His Gln
```

```
                245                 250                 255
Gln Gln Gln Gln Gln Gln Gln Leu Gln Arg
            260                 265

      <210> 903
      <211> 101
      <212> PRT
      <213> Eucalyptus grandis

      <400> 903
Val Pro Ser Met Lys Pro Glu Tyr Pro Val Pro Asn Gly Ile Gly Ala
 1               5                  10                  15
Ser Asp Phe Gly Glu Ser Phe Arg Phe Gln Lys Val Leu Gln Gly Gln
            20                  25                  30
Glu Asn Leu Gly Phe Gly Thr Pro Tyr Asp Gly Ile Glu Thr Gln Ser
        35                  40                  45
His Arg Leu Ser Glu Val Arg Arg His His Pro Asp Asp Ser Gly Gly
    50                  55                  60
Ser Glu Ala Ala Ala Thr Arg Asn Gly Ile Thr Asn Pro Ser Val Asn
65                  70                  75                  80
Ala Ser Val Thr Tyr Lys Gly Met Gly Phe Gly Glu Ser Phe Arg Phe
                85                  90                  95
Arg Glu Val Leu Gln
            100

      <210> 904
      <211> 142
      <212> PRT
      <213> Eucalyptus grandis

      <400> 904
Pro Pro Ser Pro Leu Leu Pro Pro Pro Ser Ile Pro Lys Thr Leu Leu
 1               5                  10                  15
Arg Ile Asp Ser Gly Ser Pro Leu Arg Pro Pro Pro Pro Pro Ala Ala
            20                  25                  30
Met Asp Ala Ala Pro Pro Gly Gly Gly Gly Gly Gly Gly Gly Pro Ala
        35                  40                  45
Pro Phe Leu Leu Lys Thr Tyr Glu Met Val Asp Asp Ala Gly Thr Asp
    50                  55                  60
Glu Ile Val Ala Trp Ser Ser Gly Lys Thr Ser Phe Val Val Trp Asn
65                  70                  75                  80
Pro Pro Glu Phe Ala Arg Leu Leu Leu Pro Thr Tyr Phe Lys His Asn
                85                  90                  95
Asn Phe Ser Ser Phe Ile Arg Gln Leu Asn Thr Tyr Gly Phe Arg Lys
            100                 105                 110
Ile Asp Pro Glu Arg Trp Glu Phe Ala Asn Glu Glu Phe Val Lys Asp
        115                 120                 125
Lys Lys His Leu Leu Lys Asn Ile His Arg Arg Lys Pro Ile
    130                 135                 140

      <210> 905
      <211> 80
      <212> PRT
      <213> Eucalyptus grandis

      <400> 905
Met Tyr Val Leu Glu Gly Val Thr Pro Cys Ile Gln Ser Met Gln Leu
 1               5                  10                  15
Gln Ala Gly Asp Thr Val Thr Phe Ser Arg Met Asp Pro Glu Ala Lys
            20                  25                  30
Leu Ile Met Gly Phe Arg Lys Ala Ser Thr Ser Met Met Gln Asp Ser
```

35 40 45
Gln Leu Ala Ala Val Ser Asn Gly Asn His Ser Ser Glu Ala Leu Ile
50 55 60
Ser Gly Gly Phe Glu Asn Val Pro Met Ile Ser Gly Tyr Ser Ser Leu
65 70 75 80

<210> 906
<211> 30
<212> PRT
<213> Eucalyptus grandis

<400> 906
Arg Thr Gly Lys Ala Glu Ser Glu Cys Leu Cys Pro Arg Asn Ser Gly
1 5 10 15
Leu Leu Asp Ala Leu Val His Glu Ser Lys Thr Met Ser Ser
20 25 30

<210> 907
<211> 69
<212> PRT
<213> Eucalyptus grandis

<400> 907
Met Asn Gln Val Ala Asp Arg Gln Ile Pro Phe Tyr Asn Leu Pro Ser
1 5 10 15
Lys Ile Leu Cys Arg Val Ile Asn Val Gln Leu Arg Ala Glu Pro Glu
20 25 30
Thr Asp Glu Leu Phe Ala Gln Val Thr Leu Leu Pro Val Pro Asn Gln
35 40 45
Asp Glu Thr Ala Val Glu Lys Glu Thr Gly Ile Pro Cys Leu Gln Arg
50 55 60
Pro Arg Val His Ser
65

<210> 908
<211> 60
<212> PRT
<213> Eucalyptus grandis

<400> 908
Thr Phe Met Gly Ile Cys Ser Leu Gln His Ser Ser Gln Gln Ala Glu
1 5 10 15
Glu Ala Leu Ser Gln Gly Leu Glu Gln Leu Gln Gln Ser Leu Val Asp
20 25 30
Thr Ile Ala Gly Gly Pro Ser Ile Glu Gly Met Gln Gln Met Ala Ile
35 40 45
Ala Leu Gly Lys Leu Thr Asn Leu Glu Gly Phe Val
50 55 60

<210> 909
<211> 139
<212> PRT
<213> Eucalyptus grandis

<400> 909
Ile Gly Tyr Pro Lys Met Pro Leu Gln Ala Ser Ile Ser Thr Gln Ser
1 5 10 15
Asp Phe Gln Ala Asp Gly Ser Gly His Gly Val Pro Ile Pro Gln Gly
20 25 30
Ala Asp Ser Gly Ser Leu Gly Ile Ser Ala Leu Pro Thr Ile Gln Arg
35 40 45

Asp Ser Gly Val His Val Lys Gln Thr Thr Ser Glu Ser Ser Arg Glu
    50   55   60
Asp Ser Asp Asp Glu Glu Phe Glu Gly Asp Thr Gly Thr Thr Glu Asn
65   70   75   80
Lys Asp Pro Ala Glu Val Arg Arg Ala Arg Arg Met Gln Ser Asn Arg
                85   90   95
Glu Ser Ala Arg Arg Ser Arg Arg Arg Lys Gln Glu His Met Ser Glu
            100   105   110
Leu Glu Asn Gln Val Glu His Thr Gly Leu Leu Lys Arg Leu Thr Asp
        115   120   125
Met Asn Gln Lys Tyr Asp Val Ala Ser Val Asp
    130   135

<210> 910
<211> 153
<212> PRT
<213> Eucalyptus grandis

<400> 910
Gly Thr Gly Gly Asn Trp Ile Ala Leu Pro Arg Lys Ala Gly Leu Lys
1   5   10   15
Arg Cys Gly Lys Ser Cys Arg Leu Arg Trp Leu Asn Tyr Leu Arg Pro
            20   25   30
Asp Ile Lys His Gly Gly Phe Thr Glu Glu Glu Asp His Val Ile Cys
        35   40   45
Thr Leu Phe Phe Thr Ile Gly Ser Arg Trp Ser Val Ile Ala Ser Lys
    50   55   60
Leu Pro Gly Arg Thr Asp Asn Asp Val Lys Asn Tyr Trp Asn Thr Lys
65   70   75   80
Leu Lys Lys Lys Leu Met Lys Gln Leu Ala Ser Leu Lys Thr Val Pro
                85   90   95
Glu Ser Asn Phe Asp Tyr Gln Val Cys Ala Gln Asn Ser Ala Ser Ile
            100   105   110
Asp Pro Glu Thr Lys Asn Arg Glu Tyr Ala Ala Asn Ser Met Gly Phe
        115   120   125
Pro Lys Gln Asn Phe Asn Pro Gly Ile Pro Thr Ser Asn Ser Ser Leu
    130   135   140
Leu Cys Pro Pro Ser Leu Thr Glu Val
145   150

<210> 911
<211> 118
<212> PRT
<213> Eucalyptus grandis

<400> 911
Thr Ser Cys Ala Asp Asn Cys Arg Leu Ser Leu Ser Leu Ile Gln Ala
1   5   10   15
Pro Val Phe Ser Ser Ile Leu Ser Lys Lys Leu Leu Cys Phe Phe Ser
            20   25   30
Leu Ser Leu Ser Thr Met Ala Arg Pro Gln Gln Arg Tyr Arg Gly Val
        35   40   45
Arg Gln Arg His Trp Gly Ser Trp Val Ser Glu Ile Arg His Pro Leu
    50   55   60
Leu Lys Thr Arg Ile Trp Leu Gly Thr Phe Glu Thr Ala Glu Asp Ala
65   70   75   80
Ala Arg Ala Tyr Asp Glu Ala Ala Arg Leu Met Cys Gly Pro Arg Ala
                85   90   95
Arg Thr Asn Phe Pro Tyr Asn Pro Asn Met Ser Gln Ser Leu Arg Arg
            100   105   110
Ser Ser Ser Arg Arg His

115

<210> 912
<211> 88
<212> PRT
<213> Eucalyptus grandis

<400> 912
Met Glu Ala Ala Ala Ala Ala Ala Lys Val Val Gly Glu Ala Glu Glu
1 5 10 15
Leu Pro Lys Thr Ile Val Arg Arg Val Val Lys Glu Lys Leu Ser Arg
20 25 30
Cys Ser Asp Asp Gly Asp Val Ser Leu His Lys Asp Ala Leu Leu Ala
35 40 45
Phe Ser Glu Ser Ala Arg Ile Phe Ile His Tyr Leu Ser Ala Thr Ala
50 55 60
Asn Asp Ile Cys Lys Glu Ser Lys Arg Gln Thr Ile Asn Ala Asp Asp
65 70 75 80
Val Leu Lys Ala Leu Glu Glu Met
85

<210> 913
<211> 84
<212> PRT
<213> Eucalyptus grandis

<400> 913
Pro Val His Glu Gln Gly Gln Leu Arg Gly Val Asp Arg Leu Glu Gly
1 5 10 15
Ser His Trp Val Pro Ile Gly Trp Glu Arg Ile Ser Ala Leu Ala Gln
20 25 30
Thr Val Gln Val Asp Ala Gly Trp Gly Met Gln Leu Asp Ser Met Asp
35 40 45
Asp Asp Glu Asp Leu Thr Val Ala Asp Met Glu Thr Pro Tyr Trp Glu
50 55 60
Arg Pro Ala Gly Pro Ile Trp Trp Cys His Phe Ser Ala Gly His Pro
65 70 75 80
Ala Val Glu Ala

<210> 914
<211> 184
<212> PRT
<213> Eucalyptus grandis

<400> 914
Met Lys Pro Thr Ile Asp Leu Glu Val Glu Ala Val Ser Glu Asn Asp
1 5 10 15
Ser Glu Ile Ser Ser Gln Val Ala Ser Asn Leu Ser Asn Gln Glu Pro
20 25 30
Ser Met Gly Pro Ser Asn Asp Ser Leu Ala Asn Ser Ser Tyr Leu Ile
35 40 45
Ser Pro Ser Ala Val Gly Ser Gly Ser Glu Thr Val Phe Leu Asp Leu
50 55 60
Ser Leu Gly Cys Ser Asn Asp Glu Ser Ser Gly Arg Asp Ser Val Gly
65 70 75 80
Val Ala Phe Ser Ser Thr Ser Glu Cys Ser Asn Glu Pro Glu Ser His
85 90 95
Pro Ala Ala Ala Gly Pro Thr Thr Ser Arg Val Phe Ser Cys Asn Tyr
100 105 110
Cys Gln Arg Lys Phe Phe Ser Ser Gln Ala Leu Gly Gly His Gln Asn

115 120 125
Ala His Lys Arg Glu Arg Thr Leu Ala Lys Arg Ala Met Arg Met Gly
130 135 140
Met Phe Ser Ser Gln Arg Tyr Ser Ser Leu Ala Ser Leu Pro Leu His
145 150 155 160
Gly Ser Pro Thr Val Arg Asp Leu Gly Ile Lys Ala His Ser Ser Val
165 170 175
His Gln Val His Gln Gly Met Leu
180

<210> 915
<211> 96
<212> PRT
<213> Eucalyptus grandis

<400> 915
Met Trp Asn Pro Ser Ala Ala Gln Glu Asp Asp Asp Ser Trp Glu Val
1 5 10 15
Arg Ala Phe Ala Glu Asp Thr Ser Asn Ile Met Gly Ala Thr Trp Pro
20 25 30
Pro Arg Ser Tyr Thr Cys Ser Phe Cys Arg Arg Glu Phe Arg Ser Ala
35 40 45
Gln Ala Leu Gly Gly His Met Asn Val His Arg Arg Asp Arg Ala Lys
50 55 60
Leu His Gln Ser Gln Phe Arg Pro Leu Ala Asn Gln Asn Ser Pro Phe
65 70 75 80
Ala Ser Cys Ser Ser Pro Ser Ser Ser Thr Leu Leu Phe Pro Asn Gln
85 90 95

<210> 916
<211> 176
<212> PRT
<213> Eucalyptus grandis

<400> 916
Met Ala Glu Leu Asp Tyr Cys Gln Thr Lys Ser Ser Pro Gly Ala Ala
1 5 10 15
Ala Thr Arg Leu Lys Leu Phe Gly Phe Asn Val Ser Asp Glu Glu Asp
20 25 30
Ser Ala Val Ser Asp Pro Ile Thr Val Gly Ala Asn Gly Gly Gly Gly
35 40 45
Gly Gly Gly Gly Lys Ala Thr Pro Ser Gly Ser Pro Glu Gly Ser Val
50 55 60
Pro Val Gly Gly Gly Gly Glu Arg Lys Tyr Glu Cys Gln Tyr Cys Cys
65 70 75 80
Arg Glu Phe Ala Asn Ser Gln Ala Leu Gly Gly His Gln Asn Ala His
85 90 95
Lys Lys Glu Arg Gln Gln Leu Lys Arg Ala Gln Leu His Ala Ser Arg
100 105 110
Asn Ala Ala Val Ser Ser Leu Val Arg Asn Pro Ile Ile Ser Ala Phe
115 120 125
Ala Thr Pro Pro His Leu Leu Ala Thr Val Gly Pro Val Val Val Thr
130 135 140
Gly Ala Ala Pro Thr Ser Pro Ser Trp Val Tyr Val Pro Arg Gly Ala
145 150 155 160
Pro Pro Phe Gln Val Ser His Gly Cys Val Phe Thr Thr Gly Gln Gly
165 170 175

<210> 917
<211> 138
<212> PRT

<213> Eucalyptus grandis

<400> 917
Glu His Gln Ser Asn Pro Trp His Gln Ser Ser Ser Ala Ala Asn His
1 5 10 15
Arg Gln Leu Asn Leu Glu Leu Ala Leu Glu Pro Cys Ser Pro Ser Ser
20 25 30
Ser Ser Ser Pro Ala Ser Leu His Pro Leu Ala Val Pro Ala Lys Asp
35 40 45
Asn Lys Leu Tyr Ser Cys Asn Phe Cys Gln Lys Lys Phe Tyr Ser Ser
50 55 60
Gln Ala Leu Gly Gly His Gln Asn Ala His Lys Leu Glu Arg Thr Leu
65 70 75 80
Ala Lys Lys Ser Arg Asp Leu Cys Ser Ala Ala Lys Pro Pro Ala Ala
85 90 95
Thr Ser Asn Gly His His Val Arg Pro Ser Phe Gln Ser Val Val Tyr
100 105 110
Glu Asn Gln Pro Arg Leu Ala Arg His Val Gly Asp Asp Met Arg Tyr
115 120 125
Ala Gly Thr Asn Pro Leu Tyr Gly Ser Ser
130 135

<210> 918
<211> 68
<212> PRT
<213> Eucalyptus grandis

<400> 918
Gln Leu Ser Ser Val Asp Arg Glu Ala Arg Val Leu Arg Tyr Arg Glu
1 5 10 15
Lys Arg Lys Asn Arg Lys Phe Glu Lys Thr Ile Arg Tyr Ala Ser Arg
20 25 30
Lys Ala Tyr Ala Glu Thr Arg Pro Arg Ile Lys Gly Arg Phe Ala Lys
35 40 45
Arg Ala Asp Ile Glu Ala Glu Ala Glu Arg Met Phe Gly Phe Gly Val
50 55 60
Val Pro Ser Phe
65

<210> 919
<211> 224
<212> PRT
<213> Eucalyptus grandis

<400> 919
Arg Gly Pro Trp Thr Val Glu Glu Asp Leu Thr Leu Val Asn Tyr Ile
1 5 10 15
Ala Asn His Gly Glu Gly Arg Trp Asn Ser Leu Ala Arg Ser Ala Gly
20 25 30
Leu Lys Arg Thr Gly Lys Ser Cys Arg Leu Arg Trp Leu Asn Tyr Leu
35 40 45
Arg Pro Asp Val Arg Arg Gly Asn Ile Thr Leu Glu Glu Gln Leu Leu
50 55 60
Ile Leu Glu Leu His Ser Arg Trp Gly Asn Arg Trp Ser Lys Ile Ala
65 70 75 80
Gln His Leu Pro Gly Arg Thr Asp Asn Glu Ile Lys Asn Tyr Trp Arg
85 90 95
Thr Arg Val Gln Lys His Ala Lys Gln Leu Lys Cys Asp Val Asn Ser
100 105 110
Lys Gln Phe Lys Asp Ala Met Lys Tyr Leu Trp Met Pro Arg Leu Val
115 120 125

Glu Arg Ile Gln Ala Ala Ser Ala Ser Val Ser Thr Ala Thr Val Ala
    130   135   140
Ala Ala Ala Met Ala Ala Pro Pro Thr Met Ala Thr Thr Ala Ala Ser
145   150   155   160
Asn Ile Gly Gly Met Ala Phe Pro Pro Ala Leu Ala Gly Met Gly Gly
                165   170   175
Asp Phe Arg Gly Gly Arg Val Asn Val Ala Pro Ser Tyr Ser Thr Pro
            180   185   190
Glu Asn Ser Cys Thr Thr Ala Ser Ser Asp Ser Phe Gly Ala Gln Val
        195   200   205
Ser Pro Val Ser Asp Leu Thr Asp Leu Asp Arg Val Leu Thr Leu Ser
    210   215   220

<210> 920
<211> 286
<212> PRT
<213> Eucalyptus grandis

<400> 920
Met Ser Leu Trp Ala Asp Tyr Asp His Ala Ala Ala Thr Asp Leu Ser
1   5   10   15
Ala Phe Trp Pro Pro Pro Ala Thr Pro Pro Pro Pro Ala Pro Ala Pro
            20   25   30
Pro Leu Ser Gln Glu Ser Leu Gln Arg Arg Leu Gln Ala Leu Ile Glu
        35   40   45
Gly Ala Arg Gly Arg Asp Gly Glu Glu Gly Ala Gly Gly Pro Ala Ala
    50   55   60
Ala Trp Thr Tyr Thr Ile Phe Trp Gln Ser Ser Gly Asp Tyr Ser Gly
65   70   75   80
Pro Val Leu Gly Trp Gly Asp Gly Tyr Tyr Lys Gly Asp Gly Arg Ala
                85   90   95
Arg Ser Arg Gly Ser Ala Cys Ser Gln Ala Glu Gln Glu His Arg Lys
            100   105   110
Lys Val Leu Arg Glu Leu Asn Ser Leu Ile Ser Gly Ala Pro Pro Ala
        115   120   125
Asp Asp Ala Val Glu Glu Glu Val Thr Asp Thr Glu Trp Phe Phe Leu
    130   135   140
Val Ser Met Thr Gln Ser Phe Ala Gly Gly Val Gly Leu Pro Gly Arg
145   150   155   160
Ala Tyr Phe Ser Ser Asn Pro Ala Trp Val Thr Gly Ala Glu Arg Leu
                165   170   175
Gly Asn Cys Gly Cys Asp Arg Ala Arg Gln Ala Gln Ile Phe Gly Leu
            180   185   190
Gln Thr Ile Ala Cys Val Pro Val Leu Asn Gly Val Val Glu Leu Gly
        195   200   205
Ser Thr Glu Pro Ile Tyr Gln Ser Ser Asp Leu Ile Ser Gly Ile Arg
    210   215   220
Gly Leu Phe Asn Phe His Glu Ser Glu Met Gly Cys Gly Gly Arg Val
225   230   235   240
Leu Asn Ser Glu His Asp Pro Ala Ser Leu Trp Ile Cys Asp Pro Pro
                245   250   255
Val Thr Met Glu Ile Asn Asp Arg Pro Met Thr Phe Gln Ile Glu Asn
            260   265   270
Pro Ser Ser Ser Ser Leu Thr Glu Ser Pro Ser Ala Ile Cys
        275   280   285

<210> 921
<211> 101
<212> PRT
<213> Eucalyptus grandis

<400> 921
Met Val Pro Pro Phe Pro Thr Ala Glu Leu Pro Leu Asn Glu Asn Asp
1 5 10 15
Ser Gln Asp Met Val Ile Tyr His Val Leu Asn Glu Ala Met Ser Gln
20 25 30
Asn Asn Ser Ser Leu Pro His Pro Asn Gln Ser Gly Ser Pro Ser Ser
35 40 45
Gly Gly Ser Leu Glu Pro Ser Arg Gly Ile Thr Lys Lys His Tyr Arg
50 55 60
Gly Val Arg Arg Arg Pro Trp Gly Lys Phe Ala Val Arg Phe Ala Thr
65 70 75 80
Arg Tyr Ala Thr Gly Pro Glu Phe Gly Ser Gly His Ser Arg Gln Pro
85 90 95
Arg Arg Arg Arg Trp
100

<210> 922
<211> 139
<212> PRT
<213> Eucalyptus grandis

<400> 922
Ile Gly Tyr Pro Lys Met Pro Leu Gln Ala Ser Ile Ser Thr Gln Ser
1 5 10 15
Asp Phe Gln Ala Asp Gly Ser Gly His Gly Val Pro Ile Pro Gln Gly
20 25 30
Ala Asp Ser Gly Ser Leu Gly Ile Ser Ala Leu Pro Thr Ile Gln Arg
35 40 45
Asp Ser Gly Val His Val Lys Gln Thr Thr Ser Glu Ser Ser Arg Glu
50 55 60
Asp Ser Asp Asp Glu Glu Phe Glu Gly Asp Thr Gly Thr Thr Glu Asn
65 70 75 80
Lys Asp Pro Ala Glu Val Arg Arg Ala Arg Arg Met Gln Ser Asn Arg
85 90 95
Glu Ser Ala Arg Arg Ser Arg Arg Arg Lys Gln Glu His Met Ser Glu
100 105 110
Leu Glu Asn Gln Val Glu His Thr Gly Leu Leu Lys Arg Leu Thr Asp
115 120 125
Met Asn Gln Lys Tyr Asp Val Ala Ser Val Asp
130 135

<210> 923
<211> 222
<212> PRT
<213> Pinus radiata

<400> 923
Met Gly Gln Gln Ser Leu Ile Tyr Ser Phe Val Ala Arg Gly Thr Val
1 5 10 15
Val Leu Ala Glu Tyr Thr Glu Phe Lys Gly Asn Phe Thr Gly Ile Ala
20 25 30
Ala Gln Cys Leu Gln Lys Leu Pro Ala Ser Asn Asn Lys Phe Thr Tyr
35 40 45
Asn Cys Asp Asn His Thr Phe Asn Tyr Leu Val Glu Asp Gly Phe Ala
50 55 60
Tyr Cys Val Val Ala Asp Glu Ser Val Gly Arg Gln Val Pro Met Ala
65 70 75 80
Phe Leu Glu Arg Val Lys Glu Asp Phe Lys Arg Arg Tyr Gly Gly Gly
85 90 95
Arg Ala Asp Thr Ala Val Ala Asn Ser Leu Asn Arg Asp Phe Gly Ser
100 105 110

Lys Leu Lys Glu His Met Gln Tyr Cys Ile Asp His Pro Glu Glu Ile
115 120 125
Ser Lys Leu Ala Lys Val Lys Ala Gln Val Ser Glu Val Lys Gly Val
130 135 140
Met Met Asp Asn Ile Glu Lys Val Leu Asp Arg Gly Glu Lys Ile Glu
145 150 155 160
Leu Leu Val Asp Lys Thr Glu Asn Leu Arg Phe Gln Ala Gln Asp Phe
165 170 175
Gln Lys Lys Gly Thr Glu Leu Arg Arg Lys Met Trp Phe Gln Asn Met
180 185 190
Lys Val Lys Leu Ile Val Leu Gly Ile Val Val Ala Leu Ile Leu Ile
195 200 205
Ile Val Leu Ser Val Cys His Gly Phe Asn Cys Ser Lys Lys
210 215 220

<210> 924
<211> 105
<212> PRT
<213> Pinus radiata

<400> 924
Met Gly Arg Gly Lys Ile Glu Ile Lys Met Ile Glu Asn Thr Ala Asn
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Lys Gly Gly Leu Leu Lys Lys Ala
20 25 30
His Glu Leu Ser Val Leu Cys Asn Ala Glu Ile Ala Leu Ile Val Phe
35 40 45
Ser Asn Thr Gly Lys Leu His Asp Trp Ser Ser Ser Ser Met Lys Lys
50 55 60
Val Met Glu Lys Tyr Gln Lys Ser Asp Gln Gly Leu Gly Leu Met Asp
65 70 75 80
Tyr Gln Gln Gln Gln Leu Leu Cys Glu Met Lys Arg Ile Thr Lys Glu
85 90 95
Asn Glu Ser Leu Arg Ala Arg Leu Arg
100 105

<210> 925
<211> 102
<212> PRT
<213> Pinus radiata

<400> 925
Val Pro Ser Pro Leu Val Pro Thr Arg Glu Asn Tyr Phe Val Arg Tyr
1 5 10 15
Cys Lys Gln His Ser Asp Gly Ile Trp Ala Val Val Asp Val Ser Leu
20 25 30
Asp Thr Leu Arg Gly Asn Pro Gln Pro His Pro Asn Cys Pro Pro Ser
35 40 45
Thr Leu Arg Cys Arg Arg Arg Pro Ser Gly Cys Leu Ile Gln Glu Met
50 55 60
Pro Asn Gly Tyr Ser Lys Val Thr Trp Val Glu His Val Glu Val Asp
65 70 75 80
Glu Arg Ala Val His Arg Ile Tyr Asp Lys Leu Val Ser Thr Val Ser
85 90 95
Arg Arg Thr Pro Tyr Arg
100

<210> 926
<211> 176
<212> PRT
<213> Pinus radiata

<400> 926
Leu Ser Asn Ile Glu Pro Lys Gln Ile Lys Val Trp Phe Gln Asn Arg
1 5 10 15
Arg Cys Arg Glu Lys Gln Arg Lys Glu Ala Ser Arg Leu Gln Thr Val
20 25 30
Asn Arg Lys Leu Thr Ala Met Asn Lys Leu Leu Met Glu Glu Asn Asp
35 40 45
Arg Leu Gln Lys Gln Val Ser Gln Leu Val Tyr Glu Asn Gly Tyr Met
50 55 60
Arg Gln Gln Leu Gln Asn Ala Ser Val Ala Ala Thr Asp Thr Ser Cys
65 70 75 80
Glu Ser Val Val Thr Ser Gly Gln His Gln His Asn Pro Thr Pro Gln
85 90 95
His Pro Pro Arg Asp Ala Ser Pro Ala Gly Leu Leu Ser Ile Ala Glu
100 105 110
Glu Thr Leu Thr Glu Phe Leu Ser Lys Ala Lys Gly Ala Ala Val Asp
115 120 125
Trp Val Gln Met Pro Gly Met Lys Pro Gly Pro Asp Ser Ile Gly Ile
130 135 140
Val Ala Ile Ser Asn Thr Cys Asn Gly Val Ala Ala Arg Ala Cys Gly
145 150 155 160
Leu Val Gly Leu Asp Pro Thr Lys Val Ala Glu Ile Leu Lys Asp Arg
165 170 175

<210> 927
<211> 68
<212> PRT
<213> Pinus radiata

<400> 927
Ile Leu Pro Glu Gly Pro Pro Glu Ser Arg Ser Val Ile Asp Asn Arg
1 5 10 15
Gln Val Glu Gly Ser Ile Leu Thr Ile Ala Phe Gln Ile Leu Val Asn
20 25 30
Asp Leu Pro Ser Ala Lys Leu Thr Leu Glu Ser Val Glu Thr Val Asn
35 40 45
Asn Leu Ile Ser Cys Thr Ala Gln Arg Ile Lys Ala Ala Leu His Lys
50 55 60
Val Glu Asp Val
65

<210> 928
<211> 68
<212> PRT
<213> Pinus radiata

<400> 928
Met Gly Arg Ala Leu Gly Arg Thr Glu Ile Lys Arg Ile Glu Asn Glu
1 5 10 15
Val Ser Arg Asn Val Ser Phe Arg Lys Arg Arg Arg Gly Leu Leu Lys
20 25 30
Lys Ala Ala Glu Leu Ser Ile Leu Cys Asp Ala Thr Val Gly Val Val
35 40 45
Val Phe Ser Pro Ala Gly Lys Leu Ser Glu Tyr Ala Ser Thr Ser Glu
50 55 60
Ser Asn Gly Tyr
65

<210> 929
<211> 126

<212> PRT
<213> Pinus radiata

<400> 929
Ile Arg Asn Pro Thr Asn Arg His Ser Ser Phe Tyr Lys Arg Lys Gly
1   5   10   15
Gly Leu Leu Lys Lys Ala Phe Glu Leu Ala Val Leu Cys Asp Ala Glu
            20   25   30
Val Ala Leu Ile Ile Phe Ser Glu Thr Gly Arg Ile Tyr Glu Phe Ala
        35   40   45
Ser His Asp Asp Val Thr Thr Val Leu Ala Lys Tyr Arg Ile Gln Thr
    50   55   60
Lys Thr Ala Gly Asn Ala Met Pro Ser Ser Leu Gln Lys Thr Glu Phe
65   70   75   80
Asp Gln Leu Gln Val Arg Met Leu Gln Glu Lys Ile Asp Asn Leu Glu
                85   90   95
Lys Thr Lys Lys His Met Val Gly Glu Asn Leu Glu Ser Leu Thr Trp
            100   105   110
Lys Glu Leu Gln Gln Val Glu Lys Lys Leu Ser Lys Ala Thr
        115   120   125

<210> 930
<211> 90
<212> PRT
<213> Pinus radiata

<400> 930
Leu Phe His Pro Ala Arg Ile Gly Gly Phe Gly Gly Gly Gln Val Ile
1   5   10   15
Leu Pro Leu Ala His Thr Val Glu His Glu Glu Phe Leu Glu Val Ile
            20   25   30
Lys Leu Glu Asn His Gly Leu Thr Gln Glu Glu Ala Leu Leu Ser Arg
        35   40   45
Asp Met Phe Leu Leu Gln Leu Cys Ser Gly Leu Asp Glu Asn Ala Val
    50   55   60
Gly Ala Cys Ala Glu Leu Val Phe Ala Pro Ile Asp Ala Ser Leu Ala
65   70   75   80
Asp Ser Ser Pro Leu Leu Pro Ser Gly Phe
                85   90

<210> 931
<211> 138
<212> PRT
<213> Pinus radiata

<400> 931
Met Gly Arg Gly Arg Val Gln Leu Arg Arg Ile Glu Asn Lys Ile Asn
1   5   10   15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
            20   25   30
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile Phe
        35   40   45
Ser Thr Arg Gly Lys Leu Tyr Glu Phe Ala Ser Ser Ser Met Asn Lys
    50   55   60
Thr Leu Glu Arg Tyr Glu Lys Cys Ser Tyr Ala Met Gln Asp Thr Thr
65   70   75   80
Gly Val Ser Asp Arg Glu Ala Gln Asn Trp His Gln Glu Val Thr Lys
                85   90   95
Leu Lys Gly Lys Val Glu Leu Leu Gln Arg Ser Gln Arg His Leu Leu
            100   105   110
Gly Glu Asp Leu Gly Pro Leu Asn Val Lys Glu Leu Gln Gln Leu Glu

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        115                     120                     125
Arg Gln Leu Glu Val Ala Leu Thr His Leu
    130                 135

      <210> 932
      <211> 161
      <212> PRT
      <213> Pinus radiata

      <400> 932
Met Gly Gln Gln Ser Leu Ile Tyr Ser Phe Val Ala Arg Gly Thr Val
 1               5                  10                  15
Val Leu Ala Glu Tyr Thr Gln Phe Thr Gly Asn Phe Thr Thr Ile Ala
            20                  25                  30
Asn Gln Cys Leu Gln Lys Ile Pro Ala Ser Asn Asn Lys Phe Thr Tyr
        35                  40                  45
Asn Cys Asp Arg His Thr Phe Asn Tyr Leu Val Glu Asp Gly Tyr Thr
    50                  55                  60
Tyr Cys Val Val Ala Asp Glu Ser Val Gly Arg Gln Leu Pro Ile Ala
65                  70                  75                  80
Phe Leu Glu Arg Ile Lys Asp Asp Phe Lys Lys Arg Tyr Gly Gly Gly
                85                  90                  95
Lys Ala Asp Thr Ala Val Ala His Ser Leu Asn Lys Asp Phe Gly Pro
            100                 105                 110
Lys Leu Lys Asp His Met Gln Tyr Cys Val Asp His Pro Glu Glu Ile
        115                 120                 125
Asn Lys Leu Ala Lys Val Lys Ala Gln Val Ser Glu Val Lys Gly Val
    130                 135                 140
Met Met Glu Asn Ile Glu Lys Val Leu Asp Arg Gly Glu Lys Ile Glu
145                 150                 155                 160
Leu


      <210> 933
      <211> 54
      <212> PRT
      <213> Pinus radiata

      <400> 933
Phe Pro Thr Gly Asn Gly Gly Thr Ile Glu Leu Leu Tyr Met His Thr
 1               5                  10                  15
Tyr Ala Ala Thr Thr Leu Ala Ser Ala Arg Asp Phe Trp Thr Leu Arg
            20                  25                  30
Tyr Thr Thr Val Leu Glu Tyr Gly Ser Leu Val Val Cys Glu Arg Ser
        35                  40                  45
Leu Ser Gly Thr Gln Gly
    50

      <210> 934
      <211> 123
      <212> PRT
      <213> Pinus radiata

      <400> 934
Arg Arg Glu Ala Cys Cys Pro Gln Pro Ser Leu Met Ala Arg Ala Pro
 1               5                  10                  15
His His His Gln Gln Gln Gln His His Gln His His Gln Gln Glu Ala
            20                  25                  30
Ser Arg Met Val Thr Ser Leu Glu Val Asp Ile Asp Thr Ala Cys Ser
        35                  40                  45
Ser Lys Pro Asn Asp Ser Ile Asp Ala Leu Lys Ser Lys Ile Ala Cys
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    50                  55                  60
His Pro His Tyr Pro Gln Leu Leu Ala Ala Tyr Met Asp Cys Gln Lys
65                  70                  75                  80
Val Gly Ala Pro Pro Glu Val Val Thr Val Leu Asp Glu Ile Ile Gln
                85                  90                  95
Glu Asn Gln Leu Gly Arg His Ser Gly Thr Met Asp Ile Gly Val Asp
            100                 105                 110
Pro Glu Leu Asp Gln Phe Met Glu Ala Tyr Cys
        115                 120

      <210> 935
      <211> 113
      <212> PRT
      <213> Pinus radiata

      <400> 935
Met Gly Arg Gly Lys Ile Glu Ile Lys Lys Ile Asp Asp Val Thr Ser
 1               5                  10                  15
Arg Gln Val Thr Phe Ser Lys Arg Lys Met Gly Ile Phe Lys Lys Ala
            20                  25                  30
His Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Val Leu Ile Phe
        35                  40                  45
Ser Asn Thr Gly Arg Leu Tyr Asp Tyr Ala Ser Ser Arg Cys Met Glu
    50                  55                  60
Arg Thr Ile Glu Arg Tyr Glu Lys Cys Thr Lys Ala Ile Asn Cys Pro
65                  70                  75                  80
Thr Ser Asp Pro Ile Val Glu Asn Lys Ser Pro Ile Gln Glu Gly Ile
                85                  90                  95
Glu Ile Leu Arg Gln Lys Leu Arg Ala Leu Gln Arg Leu Gln Arg Asn
            100                 105                 110
Leu


      <210> 936
      <211> 162
      <212> PRT
      <213> Pinus radiata

      <400> 936
Val Gln Glu Val Ala His Ile Ala Asn Gly Ser His Pro Gly Asn Cys
 1               5                  10                  15
Ile Ser Leu Leu Arg Val Asn Ala Cys Ser Thr Ser Gln Asn Val Glu
            20                  25                  30
Leu Ile Leu Gln Glu Ser Cys Thr Asp Ala Ser Gly Ser Val Ile Val
        35                  40                  45
Tyr Ala Pro Val Asp Val Pro Ala Ile Asn Ile Ala Met Ser Gly Glu
    50                  55                  60
Asp Pro Ser Tyr Ile Ala Leu Leu Pro Ser Gly Phe Ala Ile Leu Pro
65                  70                  75                  80
Asp Gly Gln Asn Arg Ser Ser Thr Ser Ser Leu Leu Glu Gly Ala Asn
                85                  90                  95
Ser Ser Ser Asn Ser Ser Asn Ser Ser Gly Leu Asp Ser Pro Leu Thr
            100                 105                 110
Arg Gly Gly Ser Leu Leu Thr Val Ala Phe Gln Val Leu Val Ser His
        115                 120                 125
Leu Pro Thr Ala Lys Leu Gly Leu Asp Ser Val Thr Thr Ile Asn Asn
    130                 135                 140
Leu Ile Cys Asn Thr Val Gln Gln Ile Lys Ser Ala Leu His Cys Ala
145                 150                 155                 160
Asp Val
```

<210> 937
<211> 114
<212> PRT
<213> Pinus radiata

<400> 937
Asn Arg Arg Ala Arg Thr Lys Trp Lys Arg Asn Glu Val Glu Cys Asp
1   5   10   15
Asn Leu Lys Arg Cys Cys Glu Ser Leu Arg Glu Glu Asn Arg Arg Leu
            20   25   30
Glu Lys Glu Val Gln Ser Leu Arg Ala Met Lys Val Pro Gln Ser Pro
        35   40   45
Asn Ser Met Pro Leu Ala Ala Ala Thr Leu Ala Met Cys Pro Ala Cys
    50   55   60
Glu Gly Leu Ala Ile Lys Asn Arg Gly Ala Ala Thr Ser Ser Thr Ala
65   70   75   80
Lys Ser Gln Gln Ser Leu Leu Thr Ile Met Gly Ile Gly Asp Val Asn
                85   90   95
Met Ile Ser Lys Asn Asn Gln Thr Pro Ser Met Gly Met Gly Asp Glu
            100   105   110
Met Asn

<210> 938
<211> 120
<212> PRT
<213> Pinus radiata

<400> 938
Met Leu Lys Thr Leu Glu Arg Tyr Gln Lys Cys Ser Tyr Val Leu Gln
1   5   10   15
Asp Ala Thr Val Ser Asp Arg Glu Ala Gln Asn Trp His Gln Glu Val
            20   25   30
Gly Lys Leu Lys Ala Lys Val Glu Leu Leu Gln Arg Ser Gln Arg His
        35   40   45
Leu Leu Gly Glu Asp Leu Gly Pro Leu Ser Ile Lys Glu Leu Gln Gln
    50   55   60
Leu Glu Arg Gln Leu Glu Val Ala Leu Thr His Val Arg Ser Arg Lys
65   70   75   80
Thr Gln Val Met Leu Glu Met Met Asp Glu Leu Arg Arg Lys Glu Arg
                85   90   95
Ile Leu Gln Glu Val Asn Lys Ser Leu Arg Lys Lys Leu Gln Glu Ala
            100   105   110
Glu Gly Gln Ala Phe Asn Ala Met
        115   120

<210> 939
<211> 110
<212> PRT
<213> Pinus radiata

<400> 939
Ser Asp Thr Ala Asn Ser Ser Glu Leu Leu Gly Ser Ser Arg Ser Asp
1   5   10   15
Gly Asp His Pro His His Gly His His Asp Gln Gln Gln Gln Gln Gln
            20   25   30
Glu Asn His Met Val Trp Gln Asn Ser Arg Leu Lys Ala Asp Val Leu
        35   40   45
Gln His Pro Leu Tyr Asp Gln Leu Leu Ala Ala His Val Ala Cys Leu
    50   55   60

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Arg Ile Ala Thr Pro Val Asp Gln Leu Pro Lys Ile Asp Ala Gln Leu
65                  70                  75                  80
Ala Gln Gln His His Val Val Ala Lys Tyr Ser Val Leu Gly Arg Asn
                85                  90                  95
Gln Leu Leu Thr Gly Glu Glu Lys Glu Glu Leu Asp Arg Phe
            100                 105                 110

      <210> 940
      <211> 86
      <212> PRT
      <213> Pinus radiata

      <400> 940
Arg Asn Tyr Leu Gly Glu Tyr Thr Gly Glu Leu Ile Ser His Arg Glu
 1               5                  10                  15
Ala Asp Lys Arg Gly Lys Ile Tyr Asp Arg Glu Asp Ser Ser Phe Leu
            20                  25                  30
Phe Asn Leu Asn Asp Gln Tyr Val Leu Asp Ala Tyr Arg Lys Gly Asp
        35                  40                  45
Lys Leu Lys Phe Ala Asn His Ser Pro Thr Pro Asn Cys Tyr Ala Lys
    50                  55                  60
Val Ile Met Val Ala Gly Asp His Arg Val Gly Ile Phe Ala Lys Glu
65                  70                  75                  80
Arg Ile Ala Ala Gly Glu
                85

      <210> 941
      <211> 128
      <212> PRT
      <213> Pinus radiata

      <400> 941
Met Gly Arg Gly Lys Ile Glu Ile Lys Met Ile Glu Asn Ala Thr Asn
 1               5                  10                  15
Arg Gln Val Thr Phe Ser Lys Arg Arg Gly Gly Leu Lys Lys Lys Ala
            20                  25                  30
Gln Glu Leu Ser Val Leu Cys Asn Ala Glu Val Ala Leu Ile Ile Phe
        35                  40                  45
Ser Ser Thr Gly Lys Leu His Glu Trp Ser Ser Ser Ser Ser Phe Phe
    50                  55                  60
Met Leu Gln Lys Ser Met Lys Lys Ile Leu Glu Arg Tyr Gln Lys Ser
65                  70                  75                  80
Glu Gln Gly Leu Gly Leu Met Asp Tyr Gln His Gln Gln Leu Leu Cys
                85                  90                  95
Glu Met Arg Arg Ile Thr Lys Glu Asn Glu Ser Leu Gln Glu Arg Leu
            100                 105                 110
Arg His Met Asn Gly Glu Glu Val Asn Ser Leu Lys Leu Pro Glu Leu
        115                 120                 125

      <210> 942
      <211> 86
      <212> PRT
      <213> Pinus radiata

      <400> 942
Ala Ile Cys Ser Ile Ser Phe His Pro Tyr Pro Lys Asp Ala Asp Lys
 1               5                  10                  15
His Leu Leu Ala Arg Gln Thr Gly Leu Thr Arg Ser Gln Val Ser Asn
            20                  25                  30
Trp Phe Ile Asn Ala Arg Val Arg Leu Trp Lys Pro Met Val Glu Glu
        35                  40                  45
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Met Tyr Met Glu Glu Leu Arg Glu Ala Glu Thr Gln Asn His Ala Ala
    50   55   60
Asp Ser Lys Val Thr Thr Glu Ser Gly Gln Asn Asn Glu Glu Thr Val
65   70   75   80
Ser Lys Glu Gly Ala Gly
                85

<210> 943
<211> 58
<212> PRT
<213> Pinus radiata

<400> 943
Gly Ala Gly Tyr Ser Ser Val Ser Gly Ile Asp Glu His Ala Ala Gly
 1   5   10   15
Phe Cys Ser Gln Leu Val Phe Ala Pro Ile Asp Ala Ser Phe Ala Asp
            20   25   30
Asp Ala Pro Leu Ala Ala Leu Trp Phe Pro Ser Asn Ser Ser Arg Ile
        35   40   45
Trp Ile Arg Met Phe Leu Leu Gln Asn Gly
    50   55

<210> 944
<211> 112
<212> PRT
<213> Pinus radiata

<400> 944
Asp Gly Gly Gly Arg Gly Ala Gly His Phe Val Met Glu Gln Phe Ile
 1   5   10   15
Pro Glu Gln Ala Val Ile Ser Asp Ser Ser Ile Ser Ser Val Lys Thr
            20   25   30
Glu Val Cys Ser Gly Ser Gly Gly Gln Phe Glu Leu Ile Arg Arg Lys
        35   40   45
Glu Glu Gly Arg Cys Gly Arg Ala Tyr Ala Glu Pro Ser Phe Val Val
    50   55   60
Thr Pro Leu Val Thr Ser Leu Pro Pro Gln Gln Gln Glu Gly Arg Met
65   70   75   80
Val Thr Ser Leu Ala Val Asp Met Asp Ser Ser Cys Ser Cys Lys Pro
                85   90   95
Asn Glu Ala Asp Ala Met Arg Ala Lys Leu Phe Ala His Val His Tyr
            100   105   110

<210> 945
<211> 134
<212> PRT
<213> Pinus radiata

<400> 945
Ala Arg Gly Lys Thr Gln Met Arg Lys Ile Glu Ser Ala Thr Ser Arg
 1   5   10   15
Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Met Lys Lys Ala Tyr
            20   25   30
Glu Leu Ser Val Leu Cys Asp Ala Gln Leu Gly Leu Ile Val Phe Ser
        35   40   45
Pro Arg Gly Lys Val Tyr Glu Phe Ser Ser Thr Cys Met Gln Lys Met
    50   55   60
Leu Ala Arg Tyr Glu Lys Cys Ser Glu Gly Ser Asp Thr Ser Thr Ser
65   70   75   80
Lys Glu Gln Asp Val Gln Cys Leu Lys Arg Glu Ser Ala Asn Met Glu
                85   90   95

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Glu Arg Ile Glu Ile Leu Glu Ser Met Gln Arg Lys Met Leu Gly Glu
            100                 105                 110
Glu Leu Ala Ser Cys Ala Leu Lys Asp Leu Asn Gln Leu Glu Ser Gln
        115                 120                 125
Val Glu Arg Gly Leu Arg
    130

      <210> 946
      <211> 110
      <212> PRT
      <213> Pinus radiata

      <400> 946
Ser Leu Val Trp Gly Ala Leu Lys Met Gly Lys Thr Lys Met Glu Ile
 1               5                  10                  15
Lys Arg Ile Gln Asn Pro Ser Arg Arg Gln Val Thr Phe Ser Lys Arg
            20                  25                  30
Lys Asn Gly Leu Leu Lys Lys Ala Phe Glu Leu Ser Val Leu Cys Asp
        35                  40                  45
Ala Glu Val Ala Leu Ile Ile Phe Ser Glu Thr Gly Lys Ile Cys Glu
    50                  55                  60
Phe Ala Ser His Asp Asp Met Ala Thr Ile Leu Glu Lys Tyr Arg Ile
65                  70                  75                  80
Tyr Thr Glu Thr His Gly Asn Met Glu Ser Ser Ser Val Gln Ser Val
                85                  90                  95
Lys Ile Gly Glu Ser Gln Leu Lys Ala Leu Arg Glu Lys Met
            100                 105                 110

      <210> 947
      <211> 92
      <212> PRT
      <213> Pinus radiata

      <400> 947
Lys Leu Pro Lys Glu Ala Arg Gln Lys Leu Leu Asp Trp Trp Thr Arg
 1               5                  10                  15
Asn Tyr Lys Trp Pro Tyr Pro Ser Glu Ser Gln Lys Ile Ala Leu Ala
            20                  25                  30
Glu Ser Thr Gly Leu Asp Gln Lys Gln Ile Asn Asn Trp Phe Ile Asn
        35                  40                  45
Gln Arg Lys Arg His Trp Lys Pro Ser Glu Glu Met Gln Phe Val Val
    50                  55                  60
Met Asp Ser Pro Asn Pro His Asn Ala Ala Phe Phe Leu Glu Gly His
65                  70                  75                  80
Leu Arg Thr Asp Gly Thr Ala Phe Ser Met Asp Cys
                85                  90

      <210> 948
      <211> 155
      <212> PRT
      <213> Pinus radiata

      <400> 948
Phe Ser Cys Val Ser Lys Ala Ala Met Ile Leu Ala Glu His Ser Glu
 1               5                  10                  15
Gly Asp Ala Glu Leu Glu Glu Val Ala Gly Glu Cys Leu Glu Arg Val
            20                  25                  30
Pro Pro Leu His Ser Arg Phe Thr His Thr Thr Lys Arg Lys Met Tyr
        35                  40                  45
Ser Phe Leu Met Asp Gly Pro Phe Val Tyr Cys Ala Ile Val Asp Glu
    50                  55                  60
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Ala Leu Gly Lys Pro Gln Val Phe Val Phe Leu Glu His Val Arg Asp
65 70 75 80
Glu Phe Lys Lys Leu Leu Lys Asn Arg Gly Cys Glu Gly Leu Ser Ser
85 90 95
Cys Cys Phe Asp Lys Glu Phe Gly Pro Val Tyr Lys Arg Leu Val Ala
100 105 110
Pro Leu Val Gly Val Pro Gln Ile Glu Lys Asp Arg Leu Met Glu Glu
115 120 125
Glu Ser Lys Ser Gln Pro Ala Lys Thr His Pro Val Gln Val Asn Asn
130 135 140
Ser Pro Lys Asp Ser Leu Pro Val Tyr Asp Asn
145 150 155

<210> 949
<211> 165
<212> PRT
<213> Pinus radiata

<400> 949
Asp Gly Ser Leu Val Ile Cys Glu Arg Ser Leu Ser Ala Ala Gln Gly
1 5 10 15
Met Pro Met Val Ser Gln Ser Gln Ser Phe Val His Gly Glu Leu Leu
20 25 30
Ser Ser Gly Tyr Leu Ile Arg Pro Cys Glu Gly Arg Gly Ala Leu Val
35 40 45
Ile Met Val Asp His Arg Asn Leu Glu Ala Ser Ser Val Pro Glu Ala
50 55 60
Leu Arg Pro Leu Tyr Glu Ser Ser Thr Phe Phe Ala Gln Lys Met Thr
65 70 75 80
Val Glu Ala Ser Tyr His Leu Gln Gly Lys Val Gln Pro Glu Met Ile
85 90 95
Ser Leu Ser Lys Lys Leu Gln Gln Pro Cys Asn Val Arg Ser Tyr Ser
100 105 110
Gln Arg Leu Cys Arg Gly Phe Asn Glu Ala Val Asn Thr Leu Pro Asp
115 120 125
Asp Gly Trp Met Ser Leu Ser Lys Asp Gly Leu Gly Asp Val Thr Ile
130 135 140
Cys Glu Ser Phe Val Lys Leu Pro Glu Pro Asn Ala Ser Gln Ile Ala
145 150 155 160
Tyr Val Asn Ser Met
165

<210> 950
<211> 153
<212> PRT
<213> Pinus radiata

<400> 950
Arg Ala Leu Gln Gln Leu Gly Met Ile Gln Gln His Ala Trp Arg Pro
1 5 10 15
Gln Arg Gly Leu Pro Glu Arg Ser Val Ser Val Leu Arg Ala Trp Leu
20 25 30
Phe Glu His Phe Leu His Pro Tyr Pro Lys Asp Ala Asp Lys His Met
35 40 45
Leu Ala Arg Gln Thr Gly Leu Thr Arg Asn Gln Val Ser Asn Trp Phe
50 55 60
Ile Asn Ala Arg Val Arg Leu Trp Lys Pro Met Val Glu Glu Met Tyr
65 70 75 80
Val Glu Glu Thr Lys Glu Ala Glu Val Asp His Gly Ser Asn Asp Lys
85 90 95
Thr Gly Lys Glu Ser Gly Glu Lys Lys Glu Asp Ala Leu Ser Lys Glu

```
            100                     105                     110
Gly Ala Ala Gly Asn Asn Gly Asn Ile His Glu Gln Gln Ser Gly Lys
        115                     120                     125
Ile Ser Lys Leu Asp Asn Ile Ala Gln Asp Gly Gly Ala Asp Glu Lys
    130                     135                     140
Pro Ala Gly Val Pro Lys Ser Glu Asn
145                     150

      <210> 951
      <211> 107
      <212> PRT
      <213> Pinus radiata

      <400> 951
Met Asn Leu Met Glu Ser Phe Glu Ala Lys Gly Lys Gly Glu Lys Arg
 1               5                  10                  15
Arg Thr Val Arg Gly Lys Thr Gln Leu Lys Arg Ile Glu Asn Gly Thr
            20                  25                  30
Ser Arg Gln Val Thr Phe Cys Lys Arg Arg Asn Gly Leu Leu Lys Lys
        35                  40                  45
Ala Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Val
    50                  55                  60
Phe Ser Pro Arg Gly Lys Leu Tyr Glu Phe Ala Asn Pro Ser Met Gln
65                  70                  75                  80
Lys Met Leu Glu Arg Tyr Glu Lys Cys Ser Glu Gly Ser Asn Pro Thr
                85                  90                  95
Ser Thr Ala Lys Glu Gln Asp Val Gln Cys Leu
            100                 105

      <210> 952
      <211> 217
      <212> PRT
      <213> Pinus radiata

      <400> 952
Met Val Arg Gly Lys Thr Gln Met Lys Arg Ile Glu Asn Asp Thr Ser
 1               5                  10                  15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
            20                  25                  30
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Gly Leu Ile Ile Phe
        35                  40                  45
Ser Pro Arg Gly Lys Leu Tyr Glu Phe Ala Ser Pro Ser Met Glu Glu
    50                  55                  60
Ile Leu Glu Lys Tyr Lys Lys Arg Ser Lys Glu Asn Gly Met Ala Gln
65                  70                  75                  80
Thr Thr Lys Glu Gln Asp Thr Gln Tyr Ser Lys His Ser Lys Gln Lys
                85                  90                  95
Leu Ala Asn Met Glu Glu Gln Ile Arg Ile Leu Glu Ser Thr Gln Arg
            100                 105                 110
Lys Met Leu Gly Glu Gly Leu Glu Ser Cys Ser Met Ala Glu Leu Asn
        115                 120                 125
Lys Leu Glu Ser Gln Ala Glu Arg Gly Leu Ser His Ile Arg Ala Arg
    130                 135                 140
Lys Thr Glu Ile Leu Val Asp Gln Ile Glu Cys Leu Lys Arg Lys Glu
145                 150                 155                 160
Arg Leu Leu Ser Glu Glu Asn Ala Leu Leu Ser Arg Lys Trp Val Asp
                165                 170                 175
Arg Gln Ser Val Asp Gly Ser Gly Ser Thr Ser Ser Ser Ile Gly Leu
            180                 185                 190
Gly Ser Ile Glu Gln Ile Glu Val Glu Thr Gln Leu Val Ile Arg Pro
        195                 200                 205
```

Pro Asn Ala Gln Asp His Cys Ser Val
210 215

<210> 953
<211> 183
<212> PRT
<213> Pinus radiata

<400> 953
Met Glu Ser Glu Glu Asp Lys Ile Ser Pro Glu Asn Lys Lys Arg Arg
1 5 10 15
Leu Lys Thr Pro Gln Gln Val Glu Gly Leu Glu Ser Phe Tyr Ala Glu
20 25 30
His Lys Tyr Pro Ser Glu Ala Met Lys Ser Gln Leu Ser Glu Glu Leu
35 40 45
Gly Leu Thr Glu Lys Gln Val Gln Gly Trp Phe Cys His Arg Arg Leu
50 55 60
Lys Asp Lys Arg Leu Met Lys Glu Glu Ala Ser Asn Asn Gly Lys Gln
65 70 75 80
Asp Pro His Asn Gly Ile Met Gln Asp Ser Val Asn Gly Val Lys Gln
85 90 95
Asp Ser Ser Gly Ser Gly Lys Lys Ser Asp His Gln Arg His Ser Arg
100 105 110
Cys Lys Glu Val Glu Ser Gln Arg Phe Ala Asn Ala Met Asp Tyr Pro
115 120 125
Ala Ala Val Leu Ala Ser Glu Leu Arg Asp His Asp Leu Phe Lys Val
130 135 140
Asn His Asp Asn Glu Asp Thr Phe Ala Gly Ser Ser Ser Ala Ser Gln
145 150 155 160
Asp Arg Ser Ser Leu Gln Ser Gly Asn Pro Tyr Glu Ala Glu Ala Arg
165 170 175
Arg Arg Pro Phe Gln Asn Gly
180

<210> 954
<211> 105
<212> PRT
<213> Pinus radiata

<400> 954
Ala Leu Phe Gly Ala Val Gln Ser Leu Pro Val Phe Thr Phe Ala Asn
1 5 10 15
Gln Ala Gly Leu Asp Met Leu Glu Thr Thr Leu Val Ala Leu Gln Asp
20 25 30
Ile Ser Leu Glu Lys Ile Leu Asp Asp Asn Gly Arg Lys Ser Phe Cys
35 40 45
Ser Asp Ile Ala Gln Ile Met Gln Gln Gly Tyr Ala Tyr Leu Pro Ala
50 55 60
Gly Val Cys Val Ser Ser Met Gly Arg Pro Ala Ser Tyr Asp Arg Ala
65 70 75 80
Ile Ala Trp Lys Val Leu Asn Asp Glu Glu Asn Pro His Cys Ile Ala
85 90 95
Phe Met Phe Met Asn Trp Ser Phe Val
100 105

<210> 955
<211> 85
<212> PRT
<213> Pinus radiata

<400> 955

Gln Arg Ile Trp His Glu Pro Ala Ser Asn Asn Lys Phe Thr Tyr Asn
1   5   10   15
Cys Asp Asn His Thr Phe Asn Tyr Leu Val Glu Asp Gly Phe Ala Tyr
            20   25   30
Cys Val Val Ala Asp Glu Ser Val Gly Arg Gln Val Pro Met Ala Phe
        35   40   45
Leu Glu Arg Val Lys Glu Asp Phe Lys Arg Arg Tyr Gly Gly Gly Arg
    50   55   60
Ala Asp Thr Ala Val Ala Asn Ser Leu Asn Arg Asp Phe Gly Ser Lys
65   70   75   80
Leu Lys Glu His Met
                85

<210> 956
<211> 119
<212> PRT
<213> Pinus radiata

<400> 956
Val Asn Ser Asn Gln Ser Asn Met Leu Ile Leu Gln Glu Ser Cys Thr
1   5   10   15
Asp Ala Ser Gly Ser Phe Val Ile Tyr Ala Pro Val Asp Ile Val Ala
            20   25   30
Met Asn Val Val Leu Ser Gly Gly Asp Pro Asp Tyr Val Ala Leu Leu
        35   40   45
Pro Ser Gly Phe Ala Ile Leu Pro Asp Gly Pro Lys Cys Met Ala Val
    50   55   60
Thr Asn Ser Gly Ile Asn Asp Leu Gly Ser Gly Gly Ser Leu Leu Thr
65   70   75   80
Val Ala Phe Gln Ile Leu Val Asp Ser Val Pro Thr Ala Lys Leu Ser
                85   90   95
Leu Gly Ser Val Ala Thr Val Asn Ser Leu Ile Ser Cys Thr Val Asp
            100   105   110
Arg Ile Lys Ala Ala Val Thr
        115

<210> 957
<211> 90
<212> PRT
<213> Pinus radiata

<400> 957
Gln Leu Leu Phe His Leu Arg Ser Gln Ser Ile Ser Pro Leu Val Thr
1   5   10   15
Cys Leu Arg Ser His Arg Ala Pro Pro Trp Pro Thr Pro Ile Ser Trp
            20   25   30
Leu Cys Ile Ile Ile Arg Val Met Thr Glu Glu Gln Met Glu Thr Leu
        35   40   45
Arg Arg Gln Ile Cys Val Tyr Ser Thr Ile Gly Ser Gln Leu Val Glu
    50   55   60
Met His Arg Ala Met Ser Gln Gln Gln Ala Phe Phe Ser Gly Arg Leu
65   70   75   80
Cys Leu Trp Asp Asn Thr Cys Phe Met Ile
                85   90

<210> 958
<211> 103
<212> PRT
<213> Pinus radiata

<400> 958

Met Gly Arg Gly Arg Val Glu Leu Lys Arg Ile Glu Asn Lys Ile Asn
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
20 25 30
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile Phe
35 40 45
Ser Ser Arg Gly Lys Leu Tyr Glu Phe Gly Ser Ala Gly Tyr Gly Ile
50 55 60
Glu Ile Ser Gly Leu Phe Ser Gly Ile Leu Tyr Tyr Asn Ile Arg Val
65 70 75 80
Gly Glu Gly Cys Glu Gly Glu Lys Arg Gly Cys Lys Val Tyr Ser Val
85 90 95
Ile Cys Phe Lys Gly Lys Ser
100

<210> 959
<211> 63
<212> PRT
<213> Pinus radiata

<400> 959
Met Val Arg Gly Lys Ile Gln Met Lys Arg Ile Glu Asn Thr Ala Ser
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala
20 25 30
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Gly Leu Met Ile Phe
35 40 45
Ser Pro Gly Gly Lys Leu Tyr Glu Phe Ala Asn Thr Ser Met Glu
50 55 60

<210> 960
<211> 60
<212> PRT
<213> Pinus radiata

<400> 960
Met Leu Leu Gln Asn Val Pro Pro Ala Leu Leu Val Arg Phe Leu Arg
1 5 10 15
Glu His Arg Ser Glu Trp Ala Asp Cys Asn Ile Asp Ala Tyr Ser Ser
20 25 30
Ala Thr Met Lys Ala Asn Ala Tyr Asn Val Pro Gly Ser Leu Gly Gly
35 40 45
Ile Thr Gly Ser Gln Val Ile Leu Pro Leu Ala His
50 55 60

<210> 961
<211> 52
<212> PRT
<213> Pinus radiata

<400> 961
Thr Ser Arg Leu His Phe Val Asp Gln Gln Leu Arg Gln Gln Arg Ala
1 5 10 15
Leu Gln Gln Leu Gly Met Ile Gln Gln His Ala Trp Arg Pro Gln Arg
20 25 30
Gly Leu Pro Glu Arg Ala Val Ser Ile Leu Arg Ala Trp Leu Phe Glu
35 40 45
His Phe Leu His
50

<210> 962

<211> 154
<212> PRT
<213> Pinus radiata

<400> 962
Ala Val Val Ile Trp Met Gly Asp Pro Glu Arg Thr Lys Met Pro Pro
1 5 10 15
Ile Lys Ile Thr Ile Thr Ile Thr Ile Met Ile Thr Ser Ser Ser Arg
20 25 30
Arg Gly Gly Asn Val Thr Thr Asp Thr Leu Leu Val Lys Phe Arg Arg
35 40 45
Trp Lys Arg Cys Leu Arg Ser Val His Ile Leu Met Thr Asn Lys Gly
50 55 60
Ser Gly Ser Ala Leu Asn Trp Ala Leu Lys Pro Arg Gln Val Lys Phe
65 70 75 80
Trp Phe Gln Asn Arg Arg Thr Gln Met Lys Ala Gln Gln Asp Arg Ser
85 90 95
Asp Asn Ala Ile Leu Arg Ala Glu Asn Glu Asn Leu Arg Asn Glu Asn
100 105 110
Val Ala Leu Arg Glu Ala Ile Lys Asn Gly Ala Cys Pro Asn Cys Gly
115 120 125
Gly Ser Thr Ser Leu Gly Glu Met Pro Gly Phe Asp Glu His His Phe
130 135 140
Arg Ile Glu Asn Thr Arg Leu Lys Glu Glu
145 150

<210> 963
<211> 143
<212> PRT
<213> Pinus radiata

<400> 963
Arg Ile Leu Lys Leu Glu Ile Pro Thr Ser Tyr Leu Val Cys Lys Ala
1 5 10 15
Arg Lys Met Gly Lys Lys Lys Val Glu Val Lys Leu Ile Gln Asn Pro
20 25 30
Thr Ser Arg Gln Gly Cys Phe Tyr Asn Arg Lys Cys Gly Leu Leu Lys
35 40 45
Lys Ala Phe Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile
50 55 60
Ile Phe Ser Gln Thr Gly Lys Ile Tyr Glu Phe Ala Ser His Asp Asp
65 70 75 80
Val Asn Ala Ile Leu Ala Lys Tyr Arg Ile Gln Thr Gly Thr Thr Thr
85 90 95
Asn Ala Met Pro Ser Ser Leu Gln Asn Thr Glu Pro Glu Thr Leu His
100 105 110
Glu Glu Thr Asn Met Leu Gly Lys Arg Lys Lys Val Glu Lys Leu His
115 120 125
Glu Lys Ile Asn Met Leu Glu Lys Arg Gly Lys Asn Met Val Trp
130 135 140

<210> 964
<211> 123
<212> PRT
<213> Pinus radiata

<400> 964
Asp His His Ala Val Glu Asp Arg Glu Leu Lys Asn His Leu Leu Arg
1 5 10 15
Lys Tyr Ser Gly Tyr Leu Ser Ser Leu Lys Gln Glu Phe Met Lys Lys
20 25 30

Lys Lys Lys Gly Lys Leu Pro Lys Asp Ala Arg Gln Lys Leu Leu Asp
35 40 45
Trp Trp Ser Leu His Asp Lys Trp Pro Tyr Pro Ser Glu Thr Glu Lys
50 55 60
Ile Ala Leu Ala Glu Cys Thr Gly Leu Asp Gln Lys Gln Ile Asn Asn
65 70 75 80
Trp Phe Ile Asn Gln Arg Lys Arg His Trp Lys Pro Ser Glu Asp Met
85 90 95
His Phe Met Val Met Asn Ser His Ser Pro His Ser Ala Ala Leu Tyr
100 105 110
Val Glu Arg His Met Met Thr Glu Gly Tyr Leu
115 120

<210> 965
<211> 71
<212> PRT
<213> Pinus radiata

<400> 965
Met Glu His Leu Asn Ala Ala Ala Ala Gln Ala Ser Ser Ser Leu Tyr
1 5 10 15
Gly Val Ser Met Ala Glu Tyr Gly Asp Val Gly Val Ser Ser Met Met
20 25 30
Ala Leu Met Thr Gln His Glu Pro His Glu Ser Glu Ser Thr Met Thr
35 40 45
Thr Ser Met Pro Ser Ser Phe Ser Ser Phe His Gly His Ala Glu Cys
50 55 60
Leu Leu Ser Ala Ala Met Phe
65 70

<210> 966
<211> 111
<212> PRT
<213> Pinus radiata

<400> 966
Met Gly Arg Gly Lys Ile Glu Ile Lys Lys Ile Glu Asn Ser Val His
1 5 10 15
Arg Gln Val Thr Phe Cys Lys Arg Arg Gly Gly Leu Met Lys Lys Ala
20 25 30
Tyr Glu Leu Ser Val Leu Cys Asp Ala Asp Val Ala Leu Ile Val Phe
35 40 45
Ser Ser Arg Gly Lys Leu Tyr Glu Leu Gly Thr Ser Asn Asn Asn Asn
50 55 60
Asn Ser Met Arg Ser Ile Leu Glu Arg Tyr Gln Lys Cys Ser Gln Thr
65 70 75 80
Ala Lys His Met Asn Phe Ser Asn Asn Thr Ser Asp Glu Lys Met Lys
85 90 95
Gln Glu Ile Asn Leu Leu Lys His Lys Leu Ile Ser Thr Tyr Gln
100 105 110

<210> 967
<211> 106
<212> PRT
<213> Pinus radiata

<400> 967
Met Asn Tyr Glu Gln Arg Leu Ile Ala Ala Ala Arg Leu Ala Asp Asn
1 5 10 15
Leu Asn Ser Thr Thr Ala Lys Glu Phe Asp Ile Pro Ser Ala Glu Glu
20 25 30

Val Ala Glu Lys Cys Ser Glu Trp Gly Val Thr Ala Gln Leu Lys Ala
35 40 45
His Gln Ala Gln Gly Leu Ser Trp Leu Ile Arg Arg Tyr Ala Ile Gly
50 55 60
Val Asn Val Ile Leu Gly Asp Glu Met Gly Leu Gly Lys Thr Leu Gln
65 70 75 80
Ala Ile Ser Leu Leu Ala Tyr Leu Lys Asp Arg Arg Lys Cys Pro Gly
85 90 95
Pro Phe Leu Val Leu Cys Pro Leu Ser Val
100 105

<210> 968
<211> 257
<212> PRT
<213> Pinus radiata

<400> 968
Ser Val Asp Val Leu Thr Ala Phe Ser Thr Gly Asn Gly Gly Thr Ile
1 5 10 15
Glu Leu Leu Tyr Met Gln Met Tyr Ala Pro Thr Thr Leu Ala Ser Ala
20 25 30
Arg Asp Phe Trp Thr Leu Arg Tyr Thr Ser Val Leu Glu Asp Gly Ser
35 40 45
Leu Val Val Cys Glu Arg Ser Leu Ser Gly Thr Gln Gly Gly Pro Ser
50 55 60
Met Pro Ala Val Gln Gln Phe Val Arg Ala Glu Met Gln Pro Ser Gly
65 70 75 80
Tyr Leu Ile Arg Pro Cys Glu Gly Gly Gly Ser Leu Ile His Ile Val
85 90 95
Asp His Met Asp Leu Glu Pro Trp Ser Val Pro Glu Val Leu Arg Pro
100 105 110
Leu Tyr Glu Ser Ser Thr Val Leu Ala Gln Lys Val Thr Met Ser Ala
115 120 125
Leu Arg His Leu Arg Gln Ile Ala Gln Glu Ala Ser Ser Asp Val Val
130 135 140
Leu Gly Trp Gly Arg Gln Pro Ala Ala Leu Arg Thr Phe Ser Gln Arg
145 150 155 160
Leu Cys Lys Gly Phe Asn Glu Ala Val Asn Gly Phe Thr Asp Asp Gly
165 170 175
Trp Ser Leu Met Gly Asn Asp Gly Met Glu Asp Val Thr Ile Leu Val
180 185 190
Asn Ser Ser Pro Ser Lys Leu Phe Gly Gln Gln Phe Ala Ser Ser Asp
195 200 205
Gly Leu Pro Ala Leu Gly Gly Gly Ile Leu Cys Ala Lys Ala Ser Met
210 215 220
Leu Leu Gln Asn Val Pro Pro Ala Leu Leu Val Arg Phe Leu Arg Glu
225 230 235 240
His Arg Ser Glu Trp Ala Asp Ser Asn Ile Asp Ala Tyr Ser Ala Ala
245 250 255
Ser

<210> 969
<211> 135
<212> PRT
<213> Pinus radiata

<400> 969
Met Ala Met Glu Glu Arg Ser Gly Asp Leu Leu Lys Gly Cys Gly Leu
1 5 10 15
Ser Glu Asn Ala Leu Asp Ala Ile Ser Glu Gly Ser Ile Gln Asn His

```
            20                  25                  30
Trp Ser Trp Ser Glu Val Lys Gln Leu Ser Val Thr Leu Leu Arg Ala
        35                  40                  45
Leu Asp Ala Gly Ile Glu His Ser Leu Leu Gly Ser Met Met Ser Ile
    50                  55                  60
Asp Arg Tyr Ala Ala Ala Glu Ser Phe His Arg Leu Ala Trp Ala Tyr
65                  70                  75                  80
Ala His Val Pro Asp Leu His Ile Met Trp Leu Leu His Leu Cys Asp
                85                  90                  95
Ala His Gln Glu Met Gln Ser Trp Ala Glu Ala Ala Gln Cys Ala Val
            100                 105                 110
Ala Val Ala Gly Val Ile Met Gln Ala Leu Val Gly Arg Asn Asp Ala
        115                 120                 125
Val Trp Gly Lys Glu His Val
    130                 135

      <210> 970
      <211> 128
      <212> PRT
      <213> Pinus radiata

      <400> 970
Arg Gly Arg Val Gln Leu Arg Arg Ile Glu Asn Lys Ile Ser Arg Gln
 1               5                  10                  15
Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Met Lys Lys Ala Ala Glu
            20                  25                  30
Leu Ser Ile Leu Cys Asp Ala Glu Val Ala Leu Ile Val Phe Ser Asn
        35                  40                  45
Lys Asp Lys Leu Tyr Glu Phe Ala Ser Ser Ser Met Thr Lys Ile Leu
    50                  55                  60
Glu Arg Tyr Arg Lys Arg Ser Asn Leu Ile Gln Asp Ile Gly Lys Asp
65                  70                  75                  80
Pro Gln Asn Ser Asp Ile Glu Leu Thr Arg Leu Lys Glu Glu Val Asp
                85                  90                  95
Arg Leu Gln Arg Ser Arg Arg His Leu Leu Gly Glu Asp Leu His Gln
            100                 105                 110
Leu Gly Ala Thr Asp Leu Gln His Leu Glu Gln Gln Leu Glu Glu Ala
        115                 120                 125

      <210> 971
      <211> 147
      <212> PRT
      <213> Pinus radiata

      <400> 971
Met Asp Ser Phe Glu Ala Lys Gly Lys Gly Glu Lys Arg Arg Thr Val
 1               5                  10                  15
Arg Gly Lys Thr Gln Met Lys Arg Ile Glu Asn Ala Thr Ser Arg Gln
            20                  25                  30
Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala Tyr Glu
        35                  40                  45
Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Met Val Phe Ser Pro
    50                  55                  60
Arg Gly Lys Leu Tyr Glu Phe Ala Asn Pro Ser Met Gln Lys Met Leu
65                  70                  75                  80
Glu Arg Tyr Glu Lys Cys Ser Glu Gly Ser Lys Thr Thr Ser Ile Ala
                85                  90                  95
Lys Glu Glu Asp Pro Lys Ala Leu Lys Arg Glu Ile Ala Asn Met Glu
            100                 105                 110
Glu Arg Ile Glu Ile Leu Glu Arg Thr Gln Arg Lys Met Leu Gly Glu
        115                 120                 125
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Glu Leu Ala Ser Cys Ala Leu Lys Asp Leu Asn Gln Leu Glu Ser Gln
    130   135   140
Val Glu Arg
145

<210> 972
<211> 45
<212> PRT
<213> Pinus radiata

<400> 972
Met Glu Lys Gln Asn Ser Gly Glu Asp Ser Asp Ser Lys Gly Gln Leu
 1   5   10   15
Asp Asn Gly Lys Tyr Val Arg Tyr Thr Asn Glu Gln Val Glu Thr Leu
            20   25   30
Glu Arg Ala Tyr Asn Glu Cys Ser Lys Pro Ser Thr Ser
        35   40   45

<210> 973
<211> 97
<212> PRT
<213> Pinus radiata

<400> 973
Met Gly Ala Phe Ala Leu Leu Ser Ser Trp Ile Asp Ala Ala Thr Asn
 1   5   10   15
Pro Lys Tyr Arg Lys Lys Arg Lys Gln Phe Gln Thr Val Glu Leu Arg
            20   25   30
Val Arg Met Asp Cys Glu Gly Cys Glu Arg Lys Val Arg Asn Ala Leu
        35   40   45
Asn Ser Met Lys Gly Val Ser Ser Val Glu Val Glu Arg Lys Gln Tyr
    50   55   60
Lys Ala Thr Val Thr Gly Tyr Val Asp Ala Asn Lys Val Leu Lys Arg
65   70   75   80
Val Arg Gln Thr Gly Lys Lys Ala Glu Leu Trp Pro Tyr Lys Pro Tyr
                85   90   95
His

<210> 974
<211> 135
<212> PRT
<213> Pinus radiata

<400> 974
Phe Ser Asn Thr Trp Phe Ser Gly Asn Leu Leu Ala Pro Gly Ala Asn
 1   5   10   15
Lys Gln Met His Leu Asp Ser Ser Ser Thr Gly Ala Pro Gly Leu Ser
            20   25   30
Asn Val Leu Ile Gly Ser Lys Tyr Leu Lys Ala Ala Gln Gln Leu Leu
        35   40   45
Asp Glu Val Val Asn Val Gly Lys Gly Ile Lys Pro Asp Ser Ala Lys
    50   55   60
His Gln Lys Ser Gln Ser Trp Ile Gly Thr Thr Ala Asn Lys Glu Asn
65   70   75   80
Ser Gly Ala Glu Gly Gly Gly Lys Asp Gly Ala Ala Ala Ala Pro Thr
                85   90   95
Trp Arg Ser Thr Ser Ala Gln Glu Thr Asn Asp Arg Pro Ser Glu Leu
            100   105   110
Ser Pro Ala Glu Arg Gln Glu Leu Gln Met Lys Lys Ala Lys Leu Val
        115   120   125

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Ala Met Leu Asp Glu Val Asp
    130                 135

      <210> 975
      <211> 93
      <212> PRT
      <213> Pinus radiata

      <400> 975
Tyr Ser Glu Val Arg Thr Arg Ala Arg Phe Trp Arg Arg Lys Gly Arg
1               5                   10                  15
Val Arg Arg Phe Lys Tyr Thr Cys Lys Ser Ala Gly His Pro Ser Ile
            20                  25                  30
Arg Lys Arg Ile Lys Asp Gly Lys Gly Gln Pro Cys Arg Gln Tyr Thr
        35                  40                  45
Pro Cys Gly Cys Gln Leu Thr Cys Gly Lys Gln Cys Pro Cys Leu Arg
    50                  55                  60
Asn Gly Thr Cys Cys Glu Lys Tyr Cys Gly Cys Ser Lys Ser Cys Lys
65                  70                  75                  80
Asn Arg Phe Arg Gly Cys His Cys Ala Lys Ser Gln Cys
                85                  90

      <210> 976
      <211> 114
      <212> PRT
      <213> Pinus radiata

      <400> 976
Ala Asp Glu Ser Leu Trp Ile Pro Asn Leu Asp Ala Gly Lys Glu Thr
1               5                   10                  15
Leu Ser Tyr Glu Glu Tyr Met Arg Gln Phe Pro Ser Thr Ile Thr Pro
            20                  25                  30
Lys Pro Ile Gly Leu Ala Thr Glu Ala Thr Arg Glu Thr Gly Met Val
        35                  40                  45
Ile Thr Asn Ser Leu Asn Leu Val Glu Thr Leu Met Asp Val Asp His
    50                  55                  60
Trp Lys Glu Met Phe Pro Cys Met Ile Ser Arg Ala Ala Thr Val Asp
65                  70                  75                  80
Val Ile Ser Ser Gly Met Gly Gly Thr Arg Asn Gly Ala Leu Gln Leu
                85                  90                  95
Met Tyr Ala Glu Leu Gln Val Leu Ser Pro Leu Val Pro Ala Arg Glu
            100                 105                 110
Tyr Phe


      <210> 977
      <211> 148
      <212> PRT
      <213> Pinus radiata

      <400> 977
Gln Ser Glu Asn Ile Met Ser Thr Arg Ile Pro Ser Ser Phe Ser Ser
1               5                   10                  15
Phe His Gly His Ala Asp Cys Leu Leu Ser Ala Ala Met Phe Gln Gly
            20                  25                  30
Ser Gln Gly Asp His Lys Leu Asn Pro Gln Pro Gly Met Asn Gln Gln
        35                  40                  45
Leu Val Ser Glu Gln Ser Ile Met Ser Asp Ser Ser Met Pro Phe Val
    50                  55                  60
Lys Thr Lys Ala Cys Ser Gly Leu Arg Asn Gln Phe Glu Phe His Arg
65                  70                  75                  80
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Glu Gln Pro Gly Asn Cys Tyr Thr Asp Gln Ser Ser Asn Ile Pro Leu
85 90 95
Ser Pro Ile Val Thr Ser Leu Ala Ser Gln Ala Arg Gly Glu Ala Arg
100 105 110
Met Ile Pro Ser Leu Asp Ala Asn Ser Ala His Phe Asn Val Asp Asn
115 120 125
Glu Glu His Ala Ile Lys Ser Lys Ile Leu Ala His Pro Gln Tyr Pro
130 135 140
Ser Leu Leu Gly
145

<210> 978
<211> 107
<212> PRT
<213> Pinus radiata

<400> 978
Met Arg Asn Pro Ile Cys Thr Asn Cys Gly Gly Pro Ala Val Leu Gly
1 5 10 15
Glu Met Ser Phe Glu Glu Gln Gln Leu Arg Ile Glu Asn Ala Arg Leu
20 25 30
Lys Glu Glu Leu Asp Arg Leu Cys Ala Leu Ala Gly Lys Phe Phe Gly
35 40 45
Arg Pro Ile Pro Ser Met Pro Ser Val Pro Leu Met Pro Lys Ser Ser
50 55 60
Leu Asp Leu Gly Val Gly Gly Met Pro Thr Ser Leu Pro Ser Ala Ser
65 70 75 80
Ala Asp Leu Met His Gly Pro Ala Gly Gly Arg Thr Gly Asn Ile Ile
85 90 95
Gly Ile Glu Arg Ser Met Leu Ala Glu Leu Ala
100 105

<210> 979
<211> 251
<212> PRT
<213> Pinus radiata

<400> 979
Met Met Met Ser Gly Gly Arg Met Tyr Gly Gly Pro Asn Val Leu Val
1 5 10 15
Thr Ala Asn Glu Asn Ile Ser Arg Ser Ala Asp Ala Leu Glu Ala Leu
20 25 30
Leu Ser Ser Pro Val Phe Asn Gly Ser Arg Ser Val Ala Asn Leu Glu
35 40 45
Glu Val Ile Gly Asn Val Ser Lys Arg Ser Phe Tyr Asn Ser Phe Asp
50 55 60
Gln Glu Glu Thr Gly Asp Glu Asp Leu Asp Asp Cys Ile His Pro Pro
65 70 75 80
Glu Lys Lys Arg Arg Leu Thr Ala Asp Gln Val Gln Phe Leu Glu Arg
85 90 95
Ser Phe Glu Ile Glu Asn Lys Leu Glu Pro Glu Arg Lys Ile Gln Leu
100 105 110
Ala Lys Glu Leu Gly Leu Gln Pro Arg Gln Val Ala Val Trp Phe Gln
115 120 125
Asn Arg Arg Ala Arg Trp Lys Thr Lys Gln Leu Glu Arg Asp Tyr Asp
130 135 140
Ile Leu Lys Ser Arg Tyr Glu Asn Leu Arg Val Asp Tyr Asp Ser Leu
145 150 155 160
Leu Lys Glu Lys Asp Lys Leu Arg Ala Glu Val Thr Phe Leu Thr Asp
165 170 175
Lys Leu His Asp Ser Asp His Glu Ala Leu Thr Lys Asp Ser Glu Ser

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                180                     185                     190
Ala Asp Lys Lys Val Tyr Pro Gln Pro Ala Ser His Ser Asp Cys Val
            195                     200                     205
Gly Glu Pro Glu Arg Ser Thr Ala Ala Lys Asp Thr Pro Pro Gly Cys
    210                     215                     220
Lys His Glu Asp Leu Leu Ser Ser Gly Thr Asp Ser Ser Gly Val Leu
225                     230                     235                     240
Asp Glu Asp Ser Pro His His Val Asp Cys Gly
                245                     250

      <210> 980
      <211> 128
      <212> PRT
      <213> Pinus radiata

      <400> 980
Lys Ile Glu Asn Thr Thr Ser Arg Gln Val Thr Phe Cys Lys Arg Lys
 1               5                  10                  15
Asn Gly Leu Leu Lys Lys Ala Tyr Glu Leu Ser Leu Leu Cys Asp Ala
            20                  25                  30
Glu Val Ala Leu Leu Ile Phe Ser Thr Ser Gly Arg Leu Tyr Glu Phe
        35                  40                  45
Ala Asn Lys Ser Val Ser Ala Thr Thr Glu Arg Tyr Met Arg Thr Tyr
    50                  55                  60
Ala Glu Asn Met Pro Gln Ser Arg Ala Leu Tyr Pro Asp Cys His His
65                  70                  75                  80
Trp Gln Glu Glu Val Arg Lys Leu Thr Gln Gln Arg Asp Ser Leu Thr
                85                  90                  95
Asn Ser Ile Arg Gln Ile Met Gly Glu Gly Leu Glu Ser Leu Ser Met
            100                 105                 110
Lys Glu Leu Lys His Ile Gln Val Gln Leu Glu Lys Ser Ile Ser Cys
        115                 120                 125

      <210> 981
      <211> 119
      <212> PRT
      <213> Pinus radiata

      <400> 981
Tyr Thr Ala Glu Gln Val Glu Ala Leu Glu Arg Leu Tyr Asn Asp Cys
 1               5                  10                  15
Pro Lys Pro Ser Ser Leu Arg Arg Gln Gln Leu Ile Arg Glu Cys Pro
            20                  25                  30
Ile Leu Ser His Ile Glu Pro Lys Gln Ile Lys Val Trp Phe Gln Asn
        35                  40                  45
Arg Arg Cys Arg Glu Lys Gln Arg Lys Glu Ala Ser Arg Leu Gln Thr
    50                  55                  60
Val Asn Arg Lys Leu Thr Ala Met Asn Lys Leu Leu Met Glu Glu Asn
65                  70                  75                  80
Asp Arg Leu Gln Lys Gln Val Ser Gln Leu Val Tyr Glu Asn Gly Tyr
                85                  90                  95
Phe Arg Gln Gln Ile Gln Thr Val Ser Ile Thr Thr Thr Asp Thr Ser
            100                 105                 110
Cys Glu Ser Val Val Thr Ser
        115

      <210> 982
      <211> 85
      <212> PRT
      <213> Pinus radiata
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<400> 982
Lys His Glu Phe Asp Val Arg Tyr Gln Lys Leu Glu Asp Lys Leu Tyr
1 5 10 15
Ile Ala Gln Leu Tyr Phe Pro Leu Ile Gly Leu Ile Leu Asp Glu Met
20 25 30
Pro Val Phe Tyr Asn Leu Ser Thr Val Glu Lys Arg Glu Val Leu Ile
35 40 45
Cys Ile Met Gln Ile Ile Arg Asn Leu Asp Asp Pro Ser Leu Ile Lys
50 55 60
Ala Trp Gln Gln Ser Ile Ala Arg Thr Arg Leu Phe Phe Lys Leu Leu
65 70 75 80
Glu Glu Cys Leu Val
85

<210> 983
<211> 96
<212> PRT
<213> Pinus radiata

<400> 983
Gly Leu Leu Val Thr Met Arg Leu Phe Ala Ala Thr Glu Pro Lys Arg
1 5 10 15
Val Phe Ala Val Thr Lys Arg Ile Phe Leu Leu Gly Phe Val Ser Phe
20 25 30
Phe Leu Arg Glu Gly Leu Val Ala Ser Val Trp Leu Pro Val Ser Pro
35 40 45
Gln Arg Leu Phe Asp Phe Leu Arg Asp Glu Arg Leu Arg Ser Lys Trp
50 55 60
Asp Ile Leu Ser Asn Gly Gly Pro Met Gln Glu Met Ala His Ile Pro
65 70 75 80
Lys Gly Gln Asp Pro Arg Asn Cys Val Ser Leu Leu Arg Ala Ser Ile
85 90 95

<210> 984
<211> 109
<212> PRT
<213> Pinus radiata

<400> 984
Leu Val Ser Leu Tyr Asn Asn His Leu Asn Gly Ile Leu Ala Asp Glu
1 5 10 15
Met Gly Leu Gly Lys Thr Val Gln Val Ile Ser Leu Ile Cys Tyr Leu
20 25 30
Met Glu Gln Lys Asn Asp Arg Gly Pro Phe Leu Val Val Val Pro Ser
35 40 45
Ser Val Leu Ser Gly Trp Leu Ser Glu Ile Ser Phe Trp Ala Pro Ser
50 55 60
Ile Ser Lys Ile Ala Tyr Thr Gly Ser Pro Asp Asp Arg Arg Arg Leu
65 70 75 80
Phe Arg Glu Asn Ile Ser Gln Gln Lys Phe Asn Val Leu Leu Thr Thr
85 90 95
Tyr Glu Tyr Leu Met Asn Lys Arg Ser Thr Lys Thr Glu
100 105

<210> 985
<211> 52
<212> PRT
<213> Pinus radiata

<400> 985
Pro Lys Asp Ala Asp Lys His Met Leu Ala Arg Gln Ala Gly Leu Thr

1 5 10 15
Arg Ser Gln Val Ser Asn Trp Phe Ile Asn Ala Arg Val Arg Leu Trp
20 25 30
Lys Pro Met Val Glu Glu Ile Tyr Met Glu Glu Ile Lys Glu Ala Glu
35 40 45
Leu Gly His Ser
50

<210> 986
<211> 101
<212> PRT
<213> Pinus radiata

<400> 986
Gln Gln Asp Asp Asp Ala Lys Val Tyr Glu Ser Pro Leu Arg Arg Lys
1 5 10 15
Asn Ala Glu Ala Pro Arg Thr Arg Trp Arg Phe Leu Pro Leu Glu Ser
20 25 30
Ala Leu Glu Asn Pro Tyr Gln Gly Leu Met Lys His Cys Thr Ser Leu
35 40 45
Leu Lys Thr Leu Met Asn His Lys Phe Gly Tyr Val Phe Asn Glu Pro
50 55 60
Val Asp Pro Val Ala Leu Gly Val Pro Asp Tyr Phe Thr Val Ile Thr
65 70 75 80
Ser Pro Met Asp Leu Gly Thr Ile Lys Ala Lys Leu Gln Asp Ser Val
85 90 95
Tyr Ser Ser Pro Leu
100

<210> 987
<211> 230
<212> PRT
<213> Pinus radiata

<400> 987
Cys Thr Gly Val Ala Ala Arg Ala Cys Gly Phe Ala Gly Leu Glu Pro
1 5 10 15
Ser Lys Val Ala Asp Ile Leu Lys Asp Arg Pro Ala Trp Leu His Asp
20 25 30
Cys Arg Arg Leu Asp Val Leu Thr Ala Phe Pro Thr Gly Lys Gly Gly
35 40 45
Ala Val Glu Leu Leu Tyr Thr Gln Met Tyr Ala Pro Thr Thr Leu Ala
50 55 60
Pro Ala Arg Asp Leu Leu Thr Leu Arg Tyr Thr Ser Leu Leu Glu Asp
65 70 75 80
Gly Ser Leu Val Val Cys Glu Arg Ser Leu Thr Gly Thr Gln Ser Gly
85 90 95
Pro Asn Met Pro Pro Val Gln His Phe Val Arg Ala Gln Met Leu Pro
100 105 110
Ser Gly Tyr Leu Ile Arg Pro Cys Glu Gly Gly Gly Cys Ile Ile His
115 120 125
Ile Val Asp His Met Asp Leu Glu Pro Trp Ser Val Pro Glu Val Ile
130 135 140
Arg Pro Leu Tyr Glu Ser Ser Ala Val Leu Ala Gln Lys Met Thr Ile
145 150 155 160
Thr Ala Leu Arg His Leu Arg Gln Val Ala Gln Glu Val Ser Gly Glu
165 170 175
Val Val Leu Gly Trp Gly Arg Gln Pro Ala Ala Leu Arg Ala Phe Ser
180 185 190
Gln Arg Leu Cys Arg Gly Phe Asn Asp Ala Val Asn Gly Phe Ala Asp
195 200 205

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Asp Gly Trp Ser Leu Leu Gly Ser Asp Gly Val Glu Asp Val Ile Ile
    210                 215                     220
Ala Ile Asn Ser Ser Pro
225                 230

      <210> 988
      <211> 164
      <212> PRT
      <213> Pinus radiata

      <400> 988
Gln Tyr Leu Arg Gln Gln Leu Gln Leu Leu His Ala Arg Ala Gly Asn
 1               5                   10                  15
Asn Thr Arg Ser Leu Gln Gln Met Ala Val Thr Ala Asn Asp Thr Ser
            20                  25                  30
Ser Asp Ser Val Val Thr Ser Gly Gln Arg Gln Gln His Ser Pro Gln
        35                  40                  45
His Pro Pro Tyr Ser Val Ser Thr Ser Arg Leu Phe Phe Ile Ala Glu
    50                  55                  60
Glu Thr Leu Thr Glu Phe Leu Ala Lys Ala Thr Gly Thr Ala Val Asp
65                  70                  75                  80
Trp Ile Gln Met Pro Gly Met Lys Pro Gly Pro Asp Ser Ile Gly Val
                85                  90                  95
Val Ala Val Ala His Ala Cys Gly Gly Val Ala Val Gln Ala Trp Gly
            100                 105                 110
Val Val Ser Leu Glu Pro Ser Glu Val Ala Glu Ala Leu Arg Asp Lys
        115                 120                 125
Val Ser Trp Leu Cys Asp Cys Arg Lys Met Glu Val Leu Gly Thr Phe
    130                 135                 140
Asp Ser Thr Asp Gly Arg Lys Leu Glu Leu Leu His Thr Gln Met Tyr
145                 150                 155                 160
Ala Pro Ile Thr


      <210> 989
      <211> 107
      <212> PRT
      <213> Pinus radiata

      <400> 989
Met Gly Lys Thr Lys Met Glu Met Lys His Ile Gln Asn Pro Ser Arg
 1               5                   10                  15
Arg Gln Val Thr Phe Ser Lys Arg Lys Asn Gly Leu Leu Lys Lys Ala
            20                  25                  30
Phe Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile Phe
        35                  40                  45
Ser Glu Thr Gly Lys Ile Ser Glu Phe Ala Ser His Asn Asp Met Ala
    50                  55                  60
Thr Ile Leu Glu Lys Tyr Arg Ile Tyr Thr Gln Thr Glu Thr Asp Gly
65                  70                  75                  80
Asn Met Gly Ala Ser Ser Val Gln Ser Val Lys Gly Trp Phe Pro Asn
                85                  90                  95
Phe Leu Glu Ile Ala Gly Phe Ser Val Cys Gly
            100                 105

      <210> 990
      <211> 68
      <212> PRT
      <213> Pinus radiata

      <400> 990
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Met Gly Arg Gly Pro Val Gln Leu Arg Arg Ile Glu Asn Lys Ile Asn
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Asn Gly Leu Ile Lys Lys Ala
20 25 30
Ser Glu Leu Ser Ile Leu Cys Asp Ala Glu Val Ala Leu Ile Val Phe
35 40 45
Ser Asn Lys Gly Lys Leu Tyr Glu Phe Ser Ser Ser Ser Met Thr Lys
50 55 60
Ile Leu Glu Arg
65

<210> 991
<211> 230
<212> PRT
<213> Pinus radiata

<400> 991
Leu Ser Leu Ser Pro Gln Gln Leu Ser Asn Ile Gln Leu Ser Cys Phe
1 5 10 15
Gln Asn Gln Pro Thr Asp Ser Glu Val Asn Cys Pro Ser Ile Ser Glu
20 25 30
Ala Thr Ser Gln Glu Asn Leu Asn Arg Ser Asp Arg Leu Thr Ser Lys
35 40 45
Leu Ser Gly Ser Leu Ser Ser Phe Arg Ala Ser Ser Arg Asp Gly Met
50 55 60
Leu Gly Thr Lys Phe Leu Gly Ser Val Asn Gly Pro Glu Cys Asn Lys
65 70 75 80
Pro Met His His Gly Thr Asn Ala Ile Gly Ala Ala Glu Leu Ser Asn
85 90 95
Thr Leu Thr Gly Ser Lys Tyr Phe Lys Ala Ala Gln Gln Leu Leu Asp
100 105 110
Glu Val Val Asn Val Gly Lys Gly Ile Lys Ser Asp Ser Val Asn His
115 120 125
Gln Lys Ser Gln Thr Trp Phe Gly Ala Ile Ser Asp Lys Lys Asn Ile
130 135 140
Ala Thr Glu Ala Thr Thr Asn Asp Arg Thr Thr Ser Ala Ile Thr Gly
145 150 155 160
Ala Ser Ile Ser Ala Glu Val Met Lys Asn Glu His Ala Phe Gly Leu
165 170 175
Thr Pro Ala Asp Arg Gln Glu Leu Gln Met Lys Lys Ala Lys Leu Val
180 185 190
Ala Met Leu Asp Glu Val Asp Arg Arg Tyr Arg Gln Tyr Tyr His Gln
195 200 205
Met Gln Ile Val Val Ser Ser Phe Glu Thr Ala Ala Gly Phe Gly Ala
210 215 220
Ala Lys Thr Tyr Thr Ser
225 230

<210> 992
<211> 76
<212> PRT
<213> Pinus radiata

<400> 992
Met Gly Arg Gly Lys Ile Glu Leu Lys Lys Ile Glu Ser Thr Ser Asn
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Arg Met Gly Leu Leu Lys Lys Ala
20 25 30
Gln Glu Leu Ser Val Leu Cys Asp Ala Glu Val Gly Val Ile Ile Phe
35 40 45
Ser Asn Thr Gly Arg Leu Tyr Asp Phe Ser Ser Ser Ser Met Glu Lys

50 55 60
Met Ile Glu Thr Tyr Tyr Arg Phe Ile Glu Lys Asn
65 70 75

<210> 993
<211> 77
<212> PRT
<213> Pinus radiata

<400> 993
Val Thr Leu Phe Leu Val Leu Gln Val Leu Asp Arg Gly Glu Lys Ile
1 5 10 15
Glu Leu Leu Val Asp Lys Thr Glu Asn Leu Arg Phe Gln Ala Gln Asp
20 25 30
Phe Gln Lys Gln Gly Thr Gln Leu Arg Arg Lys Met Trp Phe Gln Asn
35 40 45
Met Lys Val Lys Leu Val Val Leu Gly Ile Val Phe Val Leu Ile Leu
50 55 60
Ile Ile Trp Leu Ser Ile Cys His Gly Phe Lys Cys His
65 70 75

<210> 994
<211> 110
<212> PRT
<213> Pinus radiata

<400> 994
Pro Asn Ser Arg Ser Asp Gly Asn Gly Lys Ala Asp Arg Ser Asp Ser
1 5 10 15
Met Gly Thr Glu Ala Arg Thr Arg Thr Arg Phe Trp Arg Arg Arg Gly
20 25 30
Arg Val Arg Arg Leu Lys Tyr Thr Trp Lys Ser Ala Gly His Pro Ser
35 40 45
Ile Lys Lys Arg Ile Ala Asp Ser Lys Asp Gln Pro Cys Arg Gln Phe
50 55 60
Thr Pro Cys Asp Cys Gln Ser Met Cys Gly Lys Gln Cys Pro Cys Leu
65 70 75 80
Arg Ser Gly Thr Cys Cys Glu Lys Tyr Cys Gly Cys Ser Lys Gly Cys
85 90 95
Lys Asn Arg Phe Arg Gly Cys His Cys Ala Lys Ser Gln Cys
100 105 110

<210> 995
<211> 293
<212> PRT
<213> Pinus radiata

<400> 995
Ala Ser Gln Phe Ser Gly Asn Asp Met Arg Asn Tyr Gly Ala Lys Glu
1 5 10 15
Val Thr Ser Gly Leu Ala Thr Gly Gly Gln Arg Pro Pro Ala Leu Gln
20 25 30
Leu Asn Leu Ala Ala Leu Asp Ser Ser Gly Asp Gly Ala Ala Ala Lys
35 40 45
Glu Lys Arg Thr Pro Lys Val Asn Pro Tyr Tyr Leu Asn Ser Glu Phe
50 55 60
Val Met Gly Lys Asp Lys Met Pro Pro Pro Pro Pro Asp Asn Lys Lys
65 70 75 80
Gly Gly Met Lys Arg Thr Ala Gln Gly Lys Ser Glu Ile Arg Glu Thr
85 90 95
Lys Arg Pro Val Ala Asp Pro Met Asn Gly Lys Ile Leu Gln Asp Val

100 105 110
Met Lys Gln Cys Gly Phe Leu Leu Ser Arg Leu Ile Lys His Lys His
115 120 125
Gly Trp Val Phe Lys Ala Pro Val Asp Thr Val Ala Leu Gly Leu His
130 135 140
Asp Tyr Asn Thr Ile Ile Lys Gln Pro Met Asp Leu Gly Thr Ala Lys
145 150 155 160
Ala Lys Leu Asn Ala Asn Glu Tyr Lys Ser Pro Gln Glu Phe Ala Gly
165 170 175
Asp Ile Arg Leu Thr Phe Asn Asn Ala Met Thr Tyr Asn Pro Asn Gly
180 185 190
His Glu Val His Ile Met Ala Glu Gln Met Leu Gln Phe Phe Glu Asp
195 200 205
Arg Trp Lys Pro Ile Cys Asp Arg Tyr Glu Glu Glu Lys Arg Lys Leu
210 215 220
Ser Trp Ser Val Asn Asp Gly Leu Leu Pro Gly Ala Ser Gln Asn Met
225 230 235 240
Lys Asn Phe Pro Phe Gly Glu Thr Pro Lys Lys Asn Leu Lys Lys Thr
245 250 255
Glu Pro Leu Leu Gly Leu Ser Pro Arg Pro Pro Pro Asn Ala Lys Ser
260 265 270
Lys Ala Asn Gln Thr Leu Arg Ala Pro Ala Pro Lys Lys Pro Lys Ala
275 280 285
Lys Asp Leu His Lys
290

<210> 996
<211> 144
<212> PRT
<213> Pinus radiata

<400> 996
Lys Phe Asp Ile Cys Val Thr Ser Phe Glu Met Ala Ile Lys Glu Lys
1 5 10 15
Thr Ala Leu Lys Arg Phe Ser Trp Arg Tyr Ile Ile Ile Asp Glu Ala
20 25 30
His Arg Ile Lys Asn Glu Asn Ser Leu Leu Ala Lys Thr Met Arg Ile
35 40 45
Tyr Ser Thr Asn Tyr Arg Leu Leu Ile Thr Gly Thr Pro Leu Gln Asn
50 55 60
Asn Leu His Glu Leu Trp Ser Leu Leu Asn Phe Leu Leu Pro Glu Ile
65 70 75 80
Phe Ser Ser Ala Glu Thr Phe Asp Asp Trp Phe Gln Ile Ser Ala Asp
85 90 95
Asn Asp Gln Gln Glu Val Val Gln Gln Leu His Lys Val Leu Arg Pro
100 105 110
Phe Leu Leu Arg Arg Leu Lys Ser Asp Val Glu Lys Gly Leu Pro Pro
115 120 125
Lys Lys Glu Thr Ile Leu Lys Val Gly Met Ser Gln Met Gln Lys Gln
130 135 140

<210> 997
<211> 81
<212> PRT
<213> Pinus radiata

<400> 997
Met Gly Arg Gly Lys Ile Glu Thr Lys Lys Ile Glu Asn Ser Val Arg
1 5 10 15
Arg Gln Val Thr Phe Trp Lys Arg Arg Gly Gly Leu Met Lys Lys Ala
20 25 30

Phe Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Val Phe
35 40 45
Ser Gly Arg Gly Lys Leu Tyr Glu Leu Glu Thr Ser His Ser Asn Arg
50 55 60
Asn Lys Tyr Ala Pro Tyr Ser Thr Ser Thr Thr His Gln Cys Arg Trp
65 70 75 80
Phe

<210> 998
<211> 114
<212> PRT
<213> Pinus radiata

<400> 998
Tyr Tyr Leu Ile Val Ile Asp Ala Lys Val Ile Gln Ala Gly Leu Phe
1 5 10 15
Asn Asn Thr Ser Thr Ala Gln Asp Arg Arg Glu Met Leu Glu Glu Ile
20 25 30
Met Arg Arg Gly Thr Asn Ser Leu Gly Thr Asp Val Pro Ser Glu Arg
35 40 45
Glu Ile Asn Arg Leu Ala Ala Arg Ser Asp Glu Glu Phe Trp Leu Phe
50 55 60
Glu Lys Met Asp Glu Glu Arg Arg Gln Lys Glu Gly Tyr Arg Ser Arg
65 70 75 80
Leu Met Glu Glu His Glu Val Pro Asp Trp Val Phe Ser Val Pro Thr
85 90 95
Gly Lys Asn Asp Lys Gly Val Glu Asn Met Asp Ser Asn Leu Gly Phe
100 105 110
Asp Gln

<210> 999
<211> 183
<212> PRT
<213> Pinus radiata

<400> 999
Ala Asp Ser Pro His Phe Asn Glu Ala Asp Ala Ile Lys Ser Lys Ile
1 5 10 15
Leu Ala His Pro Gln Tyr Pro Asn Leu Leu Gly Ala Tyr Ile Asp Cys
20 25 30
Gln Lys Ile Gly Ala Pro Pro Glu Val Ala Ala Arg Leu Asp Ala Leu
35 40 45
Ser His Glu Tyr Glu Asn Gln Gln His Arg Ser Ser Leu Ser Ile Gly
50 55 60
Met Asp Pro Glu Leu Asp Gln Phe Met Glu Ala Tyr Cys Glu Met Leu
65 70 75 80
Thr Lys Tyr His Glu Glu Leu Thr Lys Pro Phe Lys Glu Ala Met Ser
85 90 95
Phe Leu Lys Lys Ile Glu Ala Gln Leu Asn Ser Leu Gly Lys Gly Thr
100 105 110
Ile Arg Ile Ser Pro Ser Ala Glu Asn Asp Glu Lys Thr Glu Gly Gly
115 120 125
Ala Ser Ser Glu Glu Val Glu Asp Gly Ser Gly Gly Glu Thr Asp Phe
130 135 140
Gln Glu Val Asp His His Ala Val Glu Asp Arg Glu Leu Lys Asp His
145 150 155 160
Leu Leu Arg Lys Tyr Ser Gly Tyr Leu Ser Ser Leu Lys Gln Glu Phe
165 170 175
Met Lys Lys Lys Lys Lys Lys

180

<210> 1000
<211> 122
<212> PRT
<213> Pinus radiata

<400> 1000
Cys Lys Asn Val Phe Thr Arg Leu Gln Gly Pro Val Lys Glu Gly Arg
1 5 10 15
His Thr Ala Leu Phe Met Glu Ile Pro Lys Arg Asn Glu Asn Pro Thr
20 25 30
Tyr Tyr Arg Leu Ile Glu Asn Pro Ile Asp Ala Arg Thr Ile Glu Gln
35 40 45
Arg Leu Asp Arg Phe Ser Tyr Gly Ser Val Leu Asp Phe Ala Ala Asp
50 55 60
Val Gln Leu Met Leu Glu Asn Ala Ile Arg Phe Tyr Gly His Ser Ser
65 70 75 80
Glu Val Lys Ala Asn Ala Arg Arg Leu Gln Ala Leu Phe Phe Gln Arg
85 90 95
Met Ala Asp Ser Phe Pro Asp Asp Asn Phe Ser Ser Phe Lys Thr Arg
100 105 110
Ser Leu Val Ala Leu Gly Gln Ser Ala Asn
115 120

<210> 1001
<211> 115
<212> PRT
<213> Pinus radiata

<400> 1001
Leu Val Asn Ser Gly Met Ala Phe Gly Ala Lys Arg Trp Ile Ala Thr
1 5 10 15
Leu Gln Arg Gln Cys Glu Arg Leu Ala Ser Val Leu Ala Ser Asn Ile
20 25 30
Pro Ser Arg Asp Leu Gly Val Ile Pro Ser Pro Glu Gly Arg Lys Ser
35 40 45
Ile Leu Lys Leu Ala Glu Arg Met Val Thr Ser Phe Cys Ala Gly Val
50 55 60
Ser Ala Ser Thr Ala His Thr Trp Thr Thr Leu Ser Gly Ser Gly Ala
65 70 75 80
Glu Asp Val Arg Val Met Thr Arg Lys Ser Val Asp Asp Pro Gly Arg
85 90 95
Pro Pro Gly Ile Ile Leu Ser Ala Ala Thr Ser Leu Trp Leu Pro Val
100 105 110
Pro Pro Lys
115

<210> 1002
<211> 130
<212> PRT
<213> Pinus radiata

<400> 1002
Leu Glu Ser Gln Phe Asp Gln Ser Phe Glu Tyr Pro Pro Val Glu Gln
1 5 10 15
Leu Val Lys Gln Cys Gly Lys Phe Gly Leu Leu Glu Arg Leu Leu Lys
20 25 30
His Leu Lys Ala Gln Lys His Lys Met Leu Ile Phe Ser Gln Trp Thr
35 40 45
Lys Val Leu Asp Leu Leu Glu Tyr Tyr Leu Ser Glu Arg Gly Tyr Glu

```
    50                  55                  60
Val Cys Arg Ile Asp Gly Ser Val Lys Leu Glu Asp Arg Lys Asn Gln
65                  70                  75                  80
Ile Arg Asp Phe Asn Asp Pro Asp Ser Asn Phe Cys Ile Phe Leu Leu
                85                  90                  95
Ser Thr Arg Ala Gly Gly Leu Gly Ile Asn Leu Thr Asp Ala Asp Thr
            100                 105                 110
Cys Phe Ile Tyr Asp Ser Asp Trp Asn Pro Gln Met Asp Met Gln Ala
        115                 120                 125
Met Asp
    130
```

<210> 1003
<211> 276
<212> PRT
<213> Pinus radiata

<400> 1003

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Val Lys Leu Gly Thr Thr Asn Thr Trp Leu Ser Arg Ala Val Ser Gly
 1               5                  10                  15
Gln His Arg Ala Gln Gln Gln Gln Gln Gln His Tyr Ala Glu Arg Ser
            20                  25                  30
Val Glu Glu Gly Arg Lys Trp Cys Gly Cys Ala Ala Gly Ser Arg Asp
        35                  40                  45
Cys Ile His Ser Asn Phe Leu Lys Leu Gln Asn Pro Ala Ser Ala Gly
    50                  55                  60
Ser Ser Ser Ala Ala Ala Asn Ala Leu Ser Gly Arg Trp Leu Met Pro
65                  70                  75                  80
Gly Pro Leu Leu Asn Asp Lys Ile Glu Gly Arg Glu Gly Val Glu Leu
                85                  90                  95
Leu Gly Gly Glu Ile Pro Gly Glu Ser Ile Met Ala Leu Ser Ala Gln
            100                 105                 110
Phe Lys Thr Ala Gly Ser Ala Ala Pro Glu Arg Gly Leu Leu Asn Leu
        115                 120                 125
His Ser Ala Asp Ala Val Asn Ser Asn Gly Glu Pro Val Asp Ser Gly
    130                 135                 140
Gly Ala Gly Gly Asp Arg Asp Gly Gly Glu Glu Ala Glu Asp His Ala
145                 150                 155                 160
Ala Leu Trp Gln Ser Ala Arg Ile Lys Ala Asp Ile Val Ser His Pro
                165                 170                 175
Leu Tyr Asp Gln Leu Leu Ser Ala His Leu Glu Cys Leu Arg Ile Ala
            180                 185                 190
Thr Pro Lys Asp Gln His Ser Met Ile Asp Ala Gln Leu Glu Gln Ser
        195                 200                 205
Gln His Val Val Thr Lys Tyr Ser Val Leu Gly Asn Asp Asn Phe Leu
    210                 215                 220
Val Gly Asp Lys Lys Glu Leu Asp Gln Phe Met Thr Gln Tyr Val Leu
225                 230                 235                 240
Leu Leu Cys Ser Phe Lys Glu Gln Leu Gln Tyr His Val His Val His
                245                 250                 255
Val Met Glu Ala Val Arg Ala Cys Ile Asp Leu Gln His Ser Leu Leu
            260                 265                 270
Thr Leu Thr Gly
        275
```

<210> 1004
<211> 123
<212> PRT
<213> Pinus radiata

<400> 1004

Ser Cys Ala Val Gln Ser Gln Pro Ala Ala Ser Gly Thr Arg Trp Asn
1 5 10 15
Pro Thr Pro Asp Gln Ile Arg Ile Leu Glu Met Phe Tyr Lys Gly Gly
20 25 30
Met Arg Thr Pro Asn Ala Glu Gln Ile Glu His Ile Thr Ala Gln Leu
35 40 45
Arg Gln Tyr Gly Lys Ile Glu Gly Lys Asn Val Phe Tyr Trp Phe Gln
50 55 60
Asn His Lys Ala Arg Glu Arg Gln Lys Gln Lys Arg Asn Ser Ser Met
65 70 75 80
His Gln Val Ala Ala Thr Ala Ala Lys Lys Thr Pro Thr Thr Ile Met
85 90 95
Ala Asp Asn Pro Asn Glu Leu His Lys Pro Asn Ser Asn Gly Thr Tyr
100 105 110
Ser Leu Tyr Asn Leu Pro Phe Thr Ala Met Ser
115 120

<210> 1005
<211> 90
<212> PRT
<213> Pinus radiata

<400> 1005
Met Gly Lys Thr Lys Met Glu Ile Lys Arg Ile Gln Asn Pro Ser Arg
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Lys Asn Gly Leu Leu Lys Lys Ala
20 25 30
Phe Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile Phe
35 40 45
Ser Glu Thr Gly Lys Ile Cys Glu Phe Ala Ser His Asp Asp Met Ala
50 55 60
Thr Ile Leu Glu Lys Tyr Arg Ile Tyr Thr Glu Thr Asp Gly Asn Met
65 70 75 80
Glu Ser Ser Ser Val Gln Ser Val Lys Val
85 90

<210> 1006
<211> 123
<212> PRT
<213> Pinus radiata

<400> 1006
Met Ser Val Phe Glu Thr Gly Asn Glu Arg Lys Arg Pro Ala Gly Asn
1 5 10 15
Ser Tyr Ser Ala Leu Glu Leu Ser Asp Asp Ile Gly Asp Glu Asp Gly
20 25 30
Ser Asp Asp Cys Ile His Leu Gly Glu Lys Lys Arg Arg Leu Thr Leu
35 40 45
Glu Gln Val Arg Ala Leu Glu Lys Asn Phe Glu Met Ala Asn Lys Leu
50 55 60
Glu Pro Glu Lys Lys Met Gln Leu Ala Lys Ala Leu Gly Leu Gln Pro
65 70 75 80
Arg Gln Ile Ala Val Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys Thr
85 90 95
Lys Gln Leu Glu Lys Asp Phe Asn Ile Leu Lys His Asp Tyr Asp Ser
100 105 110
Leu Lys Gln Asn Tyr Asp Asn Leu Met Glu Glu
115 120

<210> 1007
<211> 114

<212> PRT
<213> Pinus radiata

<400> 1007
Met Gly Lys Thr Lys Met Glu Met Lys His Ile Gln Asn Pro Ser Arg
1 5 10 15
Arg Gln Val Thr Phe Ser Lys Arg Lys Asn Gly Leu Leu Lys Lys Ala
20 25 30
Phe Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Ile Phe
35 40 45
Ser Glu Thr Gly Lys Ile Ser Glu Phe Ala Ser His Asn Asp Met Ala
50 55 60
Thr Ile Leu Glu Lys Tyr Arg Ile Tyr Thr Gln Thr Glu Thr Asp Gly
65 70 75 80
Asn Met Gly Ala Ser Ser Val Gln Ser Val Lys Val Gly Glu Ser Gln
85 90 95
Leu Lys Ala Leu His Glu Arg Met Asp Asn Leu Lys Lys Lys Glu Arg
100 105 110
Asn Met

<210> 1008
<211> 90
<212> PRT
<213> Pinus radiata

<400> 1008
Met Ala Ser Asn Gly Ile Met Phe Asn Ala Ser Asn Arg Asn Leu Ile
1 5 10 15
Val Met Val Asn Glu Ala Pro Ser Phe Glu Ala Asn Ser Ser Leu Asp
20 25 30
Gly Val Met Lys Asn Val Ser Lys Arg Pro Phe Tyr Asn Thr Leu Asp
35 40 45
Ala Asp Glu Ala Gly Asp Glu Asp Leu Leu Asp Glu Cys Val His Gln
50 55 60
Pro Gly Lys Lys Arg Arg Leu Ser Val Glu Gln Val Arg Phe Leu Glu
65 70 75 80
Lys Ser Phe Glu Leu Asp Asn Lys Leu Glu
85 90

<210> 1009
<211> 107
<212> PRT
<213> Pinus radiata

<400> 1009
Leu Glu Arg Ser Ile Arg Gln Gln Arg Ala Phe His His Leu Gly Leu
1 5 10 15
Met Glu Gln His Pro Trp Arg Pro Gln Arg Gly Leu Pro Glu Arg Ser
20 25 30
Val Ser Val Leu Arg Ala Trp Leu Phe Glu His Phe Leu His Pro Tyr
35 40 45
Pro Thr Asp Ala Asp Lys His Ile Leu Ala Lys Gln Thr Gly Leu Thr
50 55 60
Arg Ser Gln Val Ser Asn Trp Phe Ile Asn Ala Arg Val Arg Leu Trp
65 70 75 80
Lys Pro Met Val Glu Glu Met Tyr Met Glu Glu Leu Lys Glu Glu Lys
85 90 95
Val Asp Gln Gly Thr His Asn Ser Glu Ala Glu
100 105

<210> 1010
<211> 126
<212> PRT
<213> Pinus radiata

<400> 1010
Met Asn Leu Asn Asp His Thr Tyr Asn Leu Ser Pro Met Ala Asn Ser
1 5 10 15
Gly Asn Pro Glu Glu Gln Ile Asp Glu Asp Ala Val Asp Asp Phe Met
20 25 30
Asn Tyr Gln Pro Glu Ser Lys Lys Arg Arg Leu Thr Val Glu Gln Val
35 40 45
Arg Ser Leu Glu Arg Ser Phe Glu Ile Glu Thr Lys Leu Glu Pro Glu
50 55 60
Lys Lys Ile Gln Leu Ala Gln Glu Leu Gly Leu Gln Pro Arg Gln Val
65 70 75 80
Ala Ile Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys Thr Lys Gln Leu
85 90 95
Glu Arg Asp Tyr Ser Val Leu Lys Ala Ser Tyr Asp Ala Leu Lys Ser
100 105 110
Asp Phe Glu Arg Leu Gln Gln Glu Asn Lys Asn Ile Arg Ala
115 120 125

<210> 1011
<211> 96
<212> PRT
<213> Pinus radiata

<400> 1011
Met Phe Thr Ile Ser Thr Cys Thr Thr His Ala Gln Ser Leu Ile Tyr
1 5 10 15
Ser Phe Val Ala Arg Gly Thr Val Val Leu Ala Glu Tyr Thr Glu Phe
20 25 30
Lys Gly Asn Phe Thr Gly Ile Ala Ala Gln Cys Leu Gln Lys Leu Pro
35 40 45
Ala Ser Asn Asn Lys Phe Thr Tyr Asn Cys Asp Asn His Thr Phe Asn
50 55 60
Tyr Leu Asp Glu Asp Gly Phe Ala Tyr Cys Val Val Ala Asp Glu Ser
65 70 75 80
Val Gly Arg Gln Val Pro Met Ala Phe Leu Glu Arg Val Lys Glu Asp
85 90 95

<210> 1012
<211> 110
<212> PRT
<213> Pinus radiata

<400> 1012
Gly Cys Pro Gly Asn Ile His Asp Asp Asp Glu Glu Glu Asp Glu Glu
1 5 10 15
Glu Cys Ser Gly Thr Gly Gln Gln Thr Arg Lys Lys Arg Arg Leu Ser
20 25 30
Leu Gln Gln Val Arg Ser Leu Glu Lys Thr Phe Glu Val Glu Asn Lys
35 40 45
Leu Glu Pro Glu Arg Lys Leu Gln Leu Ala Gln Glu Leu Gly Leu Gln
50 55 60
Pro Arg Gln Val Ala Val Trp Phe Gln Asn Arg Arg Ala Arg Trp Lys
65 70 75 80
Thr Lys Gln Leu Glu Arg Asp Tyr Gly Gln Leu Lys Leu Asn Phe Glu
85 90 95
Cys Leu Lys Ser Asn Phe Asp Ala Ile Lys Gln Glu Asn Gln

100 105 110

<210> 1013
<211> 108
<212> PRT
<213> Pinus radiata

<400> 1013
Met Ala Gly Glu Lys Arg Lys Ile Asn Arg Ile Ala Asn Ala Ser Ala
1 5 10 15
Arg Gln Val Thr Phe Ala Lys Arg Arg Arg Gly Leu Phe Lys Lys Ala
20 25 30
Gln Glu Leu Ser Ile Leu Cys Glu Ala Asp Val Ala Leu Leu Val Phe
35 40 45
Ser Ser Thr Gly Lys Leu Tyr Gln Tyr Ser Ser Ser Ser Met Lys Met
50 55 60
Ile Leu Asp Gln Tyr Ile Leu Tyr Ser Arg Ser Ile Gln Lys Asp Gly
65 70 75 80
Lys Pro Asn Leu Glu Glu Ser His Asp Ile Gln Lys Ile Lys Gln Gln
85 90 95
Ile Lys Asp Ile Ser Gln Asn Leu Arg Lys Leu Arg
100 105

<210> 1014
<211> 177
<212> PRT
<213> Pinus radiata

<400> 1014
Met Gly Met Asp Met Glu Asp Cys Asn Thr Gly Leu Gly Leu Gly Met
1 5 10 15
Ser Ile Gly Leu Gly Met Asn Leu Met Arg Glu Asp Leu Gln Ser His
20 25 30
Arg His His Val Asn Gly Pro Pro Val Gln Leu Asp Leu Leu Pro Leu
35 40 45
Ala Pro Val Leu Pro Ser Arg Asp Leu Pro Trp Gly Lys Thr Ser Pro
50 55 60
Gly Thr Asp Gly Glu Arg Ser Ala Gly Glu Ser Lys Ala Thr Val Pro
65 70 75 80
Arg Arg Ile Asp Val Asn Lys Leu Pro Ala Ser Cys Tyr Tyr Asn Glu
85 90 95
Asp Thr Gly Thr Ile Asn Val Ser Ser Pro Asn Ser Ala Leu Ser Ser
100 105 110
Phe His Val Asp Ser Gly Gly Ala Ile Asn Ala Glu Ser Ser Cys Tyr
115 120 125
Gly Met Ser Val Lys Arg Glu Arg Glu Ala Thr Glu Glu Leu Glu Ala
130 135 140
Glu Arg Ala Cys Ser Arg Val Ser Asp Glu Glu Ala Asp Gln Glu Gly
145 150 155 160
Gly Thr Arg Lys Lys Leu Arg Leu Ser Lys Glu Gln Ser Ala Leu Leu
165 170 175
Glu

<210> 1015
<211> 61
<212> PRT
<213> Pinus radiata

<400> 1015
Met Gly Lys Lys Leu Glu Leu Lys Arg Ile Gln Asn Pro Asn Ser Ser

1 5 10 15
Arg Asp Ser Phe Ser Lys Cys Lys Arg Gly Leu Leu Lys Lys Ser Val
20 25 30
Lys Leu Phe Val Leu Cys Asp Ala Glu Val Ser Leu Ile Ile Leu Ser
35 40 45
Glu Thr Ala Lys Ile Tyr Glu Phe Ala Ser Asn Lys Ser
50 55 60

<210> 1016
<211> 51
<212> PRT
<213> Pinus radiata

<400> 1016
Arg Phe Gln Ala Gln Asp Phe Gln Lys Gln Gly Thr Gln Leu Arg Arg
1 5 10 15
Lys Met Trp Phe Gln Asn Met Lys Val Lys Leu Val Val Leu Gly Ile
20 25 30
Val Phe Val Leu Ile Leu Ile Ile Trp Leu Ser Ile Cys His Gly Phe
35 40 45
Lys Cys His
50

<210> 1017
<211> 68
<212> PRT
<213> Pinus radiata

<400> 1017
Met Gly Gln Gln Ser Leu Ile Tyr Ser Phe Val Ala Arg Gly Thr Val
1 5 10 15
Val Leu Ala Glu Tyr Thr Gln Phe Thr Gly Asn Phe Thr Thr Ile Ala
20 25 30
Asn Gln Cys Leu Gln Lys Ile Pro Ala Ser Asn Asn Lys Phe Thr Tyr
35 40 45
Asn Cys Asp Arg His Thr Phe Asn Tyr Leu Val Glu Asp Gly Ser His
50 55 60
Thr Val Leu Leu
65

<210> 1018
<211> 155
<212> PRT
<213> Pinus radiata

<400> 1018
Met Asp Arg Glu Lys Leu Met Lys Met Ala Gly Ala Val Arg Thr Gly
1 5 10 15
Gly Lys Gly Thr Met Arg Arg Lys Lys Lys Thr Ile His Lys Thr Ala
20 25 30
Thr Ala Asp Asp Lys Arg Leu Gln Ser Thr Leu Lys Arg Ile Gly Val
35 40 45
Asn Asn Ile Pro Ala Ile Glu Glu Val Asn Ile Phe Lys Asp Asp His
50 55 60
Val Ile His Phe Ala Asn Pro Lys Val Gln Ala Ser Ile Ala Ala Asn
65 70 75 80
Thr Trp Val Val Ser Gly Ser Ser Gln Thr Lys Lys Leu Gln Asp Leu
85 90 95
Phe Pro Gly Ile Ile Asn Gln Leu Gly Pro Glu Ser Phe Ala Asn Leu
100 105 110
Arg Lys Ile Ala Asp Gln Phe Arg Arg Pro Glu Pro Asn Pro Ala Gln

115 120 125
Gly Glu Asp Asp Asp Asp Asp Asp Val Pro Glu Leu Val Glu Gly Glu
130 135 140
Thr Phe Glu Glu Ala Ala Lys Lys Asp Ser Ser
145 150 155

<210> 1019
<211> 249
<212> PRT
<213> Pinus radiata

<400> 1019
Met Met Gln Pro Ala Val Gly Val Ala Pro Pro Pro Pro Val Ala Ala
1 5 10 15
Pro Ala Met Asp Pro Gln Gln Gln Gln Gln Gln Trp Met Met Met Gln
20 25 30
Gln Gln Met Gln Pro Gln Gln Ala Gln Pro Gln Pro Pro Pro Gln Ala
35 40 45
Gly Phe Trp Pro Pro Gln His Gln Pro Gln Pro Gln His Ala Gln Ser
50 55 60
Gln Leu Met Ala Gln Gln Tyr Pro Gln Gln Pro Thr Ser Ala Asp Glu
65 70 75 80
Ile Arg Thr Leu Trp Val Gly Asp Leu Gln Tyr Trp Met Asp Glu Thr
85 90 95
Tyr Leu His Gly Cys Phe Gly Asn Ser Gln Glu Val Val Ser Val Lys
100 105 110
Ile Ile Arg Asn Lys Gln Thr Gly Gln Ser Glu Gly Tyr Gly Phe Val
115 120 125
Glu Phe Ala Ser His Ala Gly Ala Glu Arg Ala Leu Gln Thr Tyr Asn
130 135 140
Gly Ala Gln Met Pro Asn Thr Glu Gln Phe Tyr Arg Ile Asn Trp Ala
145 150 155 160
Thr Phe Gly Ile Gly Glu Lys Arg Pro Glu Ile Gly Pro Asp Tyr Pro
165 170 175
Ile Phe Val Gly Asp Leu Ala Ser Asp Val Thr Asp Tyr Leu Leu Gln
180 185 190
Glu Thr Phe Arg Thr Arg Tyr Gln Thr Val Lys Gly Ala Lys Val Val
195 200 205
Thr Asp Arg Val Thr Gly Arg Ser Lys Gly Tyr Gly Phe Val Arg Phe
210 215 220
Gly Asp Glu Asn Glu Gln Val Arg Ala Met Thr Glu Met Asn Gly Val
225 230 235 240
Phe Cys Ser Ser Arg Pro Met Arg Ile
245

<210> 1020
<211> 82
<212> PRT
<213> Pinus radiata

<400> 1020
Ala Ser Phe Gly Leu Gly Glu Arg Arg Leu Leu Thr Gly Pro Glu His
1 5 10 15
Ser Ile Phe Val Gly Asp Leu Ala Pro Asp Val Thr Asp Tyr Leu Leu
20 25 30
Gln Glu Thr Phe Arg Ser Arg Tyr Thr Ser Val Arg Gly Ala Lys Val
35 40 45
Val Thr Asp Pro Ser Thr Gly Arg Ser Lys Gly Tyr Gly Phe Val Lys
50 55 60
Phe Ala Asp Glu Asn Glu Arg Asn Arg Ala Met Thr Glu Met Asn Gly
65 70 75 80

Val Tyr

<210> 1021
<211> 107
<212> PRT
<213> Pinus radiata

<400> 1021
Arg Gln Glu Pro Ser Leu Lys Lys Gln Ile Ile Glu Thr Ser Glu Lys
1 5 10 15
Ala Ile Val Phe Ser Gln Trp Thr Ser Met Leu Asp Leu Leu Glu Val
20 25 30
Pro Leu Lys Lys Ser Cys Ile Gln Tyr Arg Arg Leu Asp Gly Thr Met
35 40 45
Ser Val Ile Ala Arg Asp Lys Ala Val Asn Asp Phe Lys Thr Leu Pro
50 55 60
Glu Val Thr Val Met Ile Met Ser Leu Lys Ala Ala Ser Leu Gly Leu
65 70 75 80
Asn Met Val Ala Ala Ser His Val Leu Leu Leu Asp Leu Trp Val Glu
85 90 95
Ser Gln Gln Leu Lys Thr Lys Leu Leu Thr Gly
100 105

<210> 1022
<211> 99
<212> PRT
<213> Pinus radiata

<400> 1022
Leu Gly Phe Glu Asp Tyr Val Glu Pro Leu Lys Ile Tyr Leu Asn Lys
1 5 10 15
Tyr Arg Glu Leu Glu Gly Glu Lys Ser Ser Met Ala Ala Pro Pro Arg
20 25 30
Gln Ser Asp Leu Gln Gln His His His Val Asn Gly Ser Asp Pro His
35 40 45
Pro Tyr Gly His Ser Pro His Gly Pro Met Ala Tyr His Val Pro Gly
50 55 60
Gly Ala Ser Phe Arg Ala Trp Lys Val Thr Val Ala Cys Ser Phe Cys
65 70 75 80
Tyr Cys Lys Glu Val Ile Glu Met Glu Met Gly His Gly Asn Gly Asp
85 90 95
Cys Lys Val

<210> 1023
<211> 158
<212> PRT
<213> Pinus radiata

<400> 1023
Met Glu Asn Leu Pro Asn Gln Gln Pro Asp Leu Glu Ile Ala Gln Thr
1 5 10 15
His Glu Asp Pro Gly Ser Arg Gln Phe Lys Gly Ile Arg Leu Arg Lys
20 25 30
Trp Gly Arg Trp Val Ser Glu Ile Arg Ile Pro Lys Ser Arg Glu Lys
35 40 45
Ile Trp Leu Gly Ser Tyr Thr Thr Pro Glu Gln Ala Ala Arg Ala Tyr
50 55 60
Asp Ala Ala Val Tyr Cys Leu Lys Gly Pro Asn Ala Lys Phe Asn Phe
65 70 75 80

Pro Glu Thr Val His Asp Ile Pro Ser Val Thr Ser Val Ser Arg Gln
85 90 95
Glu Ile Gln His Ala Ala Leu Lys Tyr Ala Leu Gly Gln Pro Pro Pro
100 105 110
Ser Leu Gln Ser Leu Glu Gly His Ala Ala Leu Lys Tyr Ala Leu Gly
115 120 125
Gln Pro Pro Pro Ser Leu Gln Ser Leu Glu Gly His Ala Ala Leu Lys
130 135 140
Tyr Ala Leu Gly Gln Pro Pro Pro Ser Leu Gln Ser Leu Gln
145 150 155

<210> 1024
<211> 197
<212> PRT
<213> Pinus radiata

<400> 1024
Met Ala Phe Thr Gly Thr Gln Gln Lys Cys Lys Ala Cys Asp Lys Thr
1 5 10 15
Val Tyr Phe Val Asp Gln Leu Ser Ala Asp Gly Val Ser Tyr His Lys
20 25 30
Ala Cys Phe Arg Cys Asn His Cys Lys Gly Thr Leu Lys Leu Ser Asn
35 40 45
Tyr Ser Ser Met Glu Gly Val Leu Tyr Cys Lys Pro His Phe Asp Gln
50 55 60
Leu Phe Arg Glu Ser Gly Asn Phe Asn Lys Asn Phe Gln Ser Gln Arg
65 70 75 80
Ser Ser Lys Ala Ile Asp Gly Leu Ser Pro Glu Met Thr Arg Ser Pro
85 90 95
Ser Lys Val Ser Met Met Phe Ser Gly Thr Gln Asp Lys Cys Ala Thr
100 105 110
Cys Gly Lys Thr Ala Tyr Pro Leu Glu Lys Val Thr Val Glu Asn Leu
115 120 125
Ser Tyr His Lys Ser Cys Phe Arg Cys Ser His Gly Gly Cys Ser Ile
130 135 140
Ser Pro Ser Asn Tyr Ala Ala Leu Glu Gly Ile Leu Tyr Cys Lys His
145 150 155 160
His Phe Ser Gln Leu Phe Lys Glu Lys Gly Ser Tyr Asn His Leu Ile
165 170 175
Lys Thr Ala Ser Met Lys Arg Ala Ala Ala Val Pro Glu Val Ala Ser
180 185 190
Ala Val Pro Glu Ile
195

<210> 1025
<211> 232
<212> PRT
<213> Pinus radiata

<400> 1025
Lys Pro Ala Gly Thr Ser Arg Leu Pro Glu Phe Lys Ser Arg Thr Ile
1 5 10 15
Thr Leu Pro Ser Phe Asn Ile Pro Ser Ser Asn Pro Arg Lys Leu Leu
20 25 30
Asp Met Val Lys Pro Ser Gln Lys Gln Asn Ile His Val Asn Gly Lys
35 40 45
Pro Glu Ser Arg Ser Leu Met Ser Arg Gln Phe Lys Gly Ile Arg Leu
50 55 60
Arg Lys Trp Gly Lys Trp Val Ser Glu Ile Arg Met Pro Asn Cys Arg
65 70 75 80
Ala Lys Ile Trp Leu Gly Ser Tyr Glu Ser Pro Glu Lys Ala Ala Arg